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UNITED STATES ARMY
COMBAT DEVELOPMENTS COMMAND
INSTITUTE OF SPECIAL STUDIES

SOUTHEAST ASIA NIGHT OPERATIONS OPERATIONAL EVALUATION (ACN 14095V)

STANO II
PLAN OF TEST
PART 1

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OPERATIONAL EVALUATION

(ACN. 14095V)

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PLAN OF TEST

PART I

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(C) ABSTRACT

STANO II - PART I is a field test, similar to a troop test, to be conducted by United States Continental Army Command, assisted by United States Army Materiel Command and United States Army Combat Developments Command. This preliminary test has a twofold purpose. The first is to confirm and/or develop concepts of employment for selected items of STANO equipment. The second purpose is to recommend a concept of employment prior to equipment deployment to Southeast Asia and to obtain limited information on selected aspects of equipment maintenance, reliability, interactions and human factors.

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LIST OF FIGURES AND DIAGRAMS

SEA NITEOPS SYSTEMS

1. During the final stages of the development of this plan of test, the nomenclature of certain items of SEA NITEOPS equipment changed and in other instances an A/N system nomenclature number was added. Due to time limitation and to numerous references to these items throughout the plan, all changes could not be made.

2. The old and new nomenclature where applicagle and the A/N number for each system is shown below:

	NOMENCLATURE	A/N NO
a.	Man-Packed Surveillance Radar	AN/PPS-9
b.	(old) (HHV) Handheld Termal Viewer (new) Viewer, Infrared	None AN/PAS-7
c.	(ASL) Airborne Searchlight	AN/ASS-2
d.	(SVS) Supplementary Visible/Infrared Vehicular Searchlight	AN/VSS-3
e.	(old) (NOD-LR 1½ Gen) Night Observation Device, Long Range (new) Night Vision Sight, Tripod Mounted	None AN/TSS-7
f.	(old) (NVG) Night Vision Goggles (new) Binoculars, Electronic	None SU-50

PLAN OF THE PRETEST FOR THE OPERATIONAL EVALUATION OF SOUTHEAST ASIA NIGHT OPERATIONS (SEA NITEOPS) (U)

(Short Title: STANO II - Part I)

1. (U) AUTHORITY: Letter, DA, ACSFOR-DS-DC, 25 August 1969, subject: STANO II Field Test (U).

2. (U) REFERENCES: Annex O, References.

3. (U) PURPOSE: To provide an initial evaluation, under controlled CONUS conditions, of proposed doctrine and basis of issue for selected STANO equipment intended to provide an increased night operations capability to US Forces in Southeast Asia.

4. (C) SCOPE:

a. SEA NITEOPS is a high priority accelerated research and development program. The objectives of the program are: to provide an improved offensive night combat capability to US Forces in Vietnam; to determine the concept of operation and tactical employment of Combat Surveillance, Night Operations and Target Acquisition (STANO) equipment under combat conditions; and to determine the long term Army needs so a worldwide basis of issue (BOI) for STANO equipment can be developed.

b. SEA NITEOPS Operational Evaluation (STANO) is an operational evaluation conducted by three commands over a period of three years to evaluate Army night operations as modified by the addition of certain non-TOE materiel along with doctrine, techniques and basis of issue for its employment. The objective of STANO is to determine doctrine and basis of issue for selected STANO materiel intended to provide an increased night operations capability to US Forces in SEA, and to determine doctrine, organization and materiel requirements for US Army night operations worldwide. It consists of four overlapping evaluation phases designed to propose and try alternative doctrinal/BOI packages progressively narrowing the alternatives to an optimum mix for SEA by July 1970 and an optimum mix for Army worldwide by December 1970.

c. SEA NITEOPS Operational Evaluation Phase I (STANO I) is being conducted by USACDC with support from USAMC, USCONARC, and USARV during the period January 1968 through July 1970. It includes observation and/or participation in USAMC testing, USARV combat evaluation, ACTIV Combat Evaluation, USCONARC trainer tests and evaluation, human factors research, CDCEC field experimentation, Seventh and Eighth Army troop test, and other independent evaluations. The objective of STANO I is to provide information for dissemination of doctrine and bases of issue for selected STANO materiel intended to provide an increased night operations capability to US Forces in SEA, and to provide information for determination of doctrine, organization and materiel requirements for US Army night operations worldwide.

d. STANO II - Part I Test - (see paragraph 5 below for detailed discussion). This test phase was imposed on the coordinated operational evaluation program in August 1969 when it became apparent that equipment delivery schedules could not be maintained to support the STANO II Test schedule. This action is taken to maintain the momentum of the STANO evaluation program, provide critical input to the design of STANO III and test selected items of equipment prior to deployment to Southeast Asia. USACDC recommended a STANO II - Part I Test be executed in the previously scheduled STANO II time frame. This preliminary test does not replace STANO II which will not be conducted until sufficient quantities of STANO items of equipment become available.

e. The objective of STANO II is to evaluate, under controlled CONUS test conditions, proposed doctrine and bases of issue for selected STANO materiel intended to provide an increased night operations capability for US Forces in SEA, and to evaluate proposed doctrine, organization, and materiel requirements for US Army night operations worldwide. This field test, similar to a troop test, will be conducted by USCONARC.

f. The objective of STANO III is to determine, by means of a combat evaluation conducted by USARV, doctrine and bases of issue for selected STANO materiel intended to provide an increased night operations capability to US Forces in SEA. The doctrinal/BOI concept to be evaluated in SEA will be developed during STANO II-Part I.

g. The objective of STANO IV is to be determine doctrine, organization and materiel requirements for US Army night operations worldwide. Proposed methodology is to use special study techniques to synthesize, analyze and extrapolate the results of STANO I, II and III, and other evaluations. The output of STANO IV is visualized as a report stating findings, conclusions and recommendations accompanied by a proposed test field manual (revision of FM 31-36 (Test), Night Operations, April 1968); a proposed divisional TOE:

future materiel requirements to guide R&D efforts; and plans for further evaluation needs, if any.

5. (C) STANO II - Part I Test:

a. General. This test is an exploratory field test to be conducted by USCONARC under controlled test conditions.

b. Objective. The objective of the STANO II - Part I Test is to provide an initial evaluation, under controlled CONUS conditions, of proposed doctrine and basis of issue for selected STANO equipment intended to provide an increased night operations capability to US Forces in Southeast Asia. During the period of this test a concept of employment will be investigated for those 1st and 2nd generation STANO materiel items that are available in sufficient quantity to provide information for conduct of STANO III. In addition, preliminary data will be obtained on equipment operation and utilization.

c. Description.

(1) General. The STANO II - Part I Test is an evaluation that utilizes selected and currently available STANO materiel items. As such, this test does not fulfill the stated requirement for a controlled CONUS field evaluation of doctrine and bases of issue (STANO II - Part II). The test consists of a first phase in which the test units are equipped with no night operations equipment and a second phase in which the test units are equipped with those 1st and 2nd generation items that are available. Each of these periods are replicated in order to increase the possibilities of gathering valid preliminary data. These test periods are identified as test runs with four required; all data requirements are repeated in each of these test runs. The two scenarios utilized in these test runs will be essentially the same so that the data to be collected and the terrain to be utilized will be equivalent. The scenarios, however, will be so constructed as to allow a needed flexibility to be able to capitalize on use of the new equipment.

(2) Test Duration. The STANO II - Part I Test, as planned, requires fourteen (14) weeks. This period includes 2 weeks of individual training; 3 weeks of unit field training; one week for equipment refurbishment; a one week pilot test; a one week correction period during which additional training may be conducted, if required; and four weeks of actual testing. The final two weeks will be reserved to repeat test runs, should that be necessary.

(3) Test Objectives. The test objectives, subobjectives, Essential Elements of Analysis (EEA) and data requirements are

contained in Annex D.

(4) Test Equipment. STANO equipment includes SEA NITEOPS equipment, currently authorized night operations equipment, and unattended ground sensors. Annex E contains a description of the STANO equipment to be tested during the conduct of the STANO II - Part I Test. Equipment requirements to support the field test are contained in Annexes C and E. The test will include only those STANO items available in meaningful quantities.

(5) Personnel Requirements. Annex A contains the troop list for the field test. These requirements are broken down to include the test troops, aggressor troops, support troops, test directorate organization and advisory and liaison elements.

(6) Test Concept.

(a) Operations. The test envisions the utilization of infantry, aromr, artillery and aviation elements. The proposed test force is contained in Annex A and the critical TOE personnel and equipment are contained in Annex C. The field test will evaluate a proposed concept for the use of STANO equipment in night offensive and defensive operations, night patrolling, fire support to include adjustment of fire, recommaissance/surveillance and target acquisition activities at night; movement at night, both mounted and dismounted, in a low intensity environment. Test elements will be equipped with a tentative BOI for STANO equipment and will conduct typical operations following a proposed concept of operation. Doctrinal/guidance is contained in Annex B. The proposed concept of employment will emphasize techniques which may be used in conjunction with STANO equipment to improve current night operations. A tentative BOI is contained in Annex B. Shortage of SEA NITEOPS equipment precludes a combined arms system test since armor, artillery and aviation elements will be equipped primarily with first generation (TOE) night vision devices and small number of available SEA NITEOPS items of equipment. STANO equipment available for the test, both first generation (TOE) and SEA NITEOPS is contained in Annex E. Operations outlined above should not be confused with the planned combined arms system approach to be evaluated during the conduct of STANO II - Part II when sufficient quantities of SEA NITEOPS equipment becomes available. The field preliminary test will include the following type operations:

1. Infantry-Armor Operations. Evaluation to infantry-armor elements equipped with STANO equipment during night offensive and defensive operations, night patrols, counter-ambush patrols, and base security, with emphasis on the increased ability for individuals and units to move more rapidly at night, and the ability to identify targets and deliver accurate fire in the performance of tactical operations at night.

2. Artillery Operations. An evaluation of artillery elements equipped with selected STANO equipment firing at night in support of combat operations and an evaluation of artillery observers equipped with this equipment in acquiring targets and adjusting fires at night.

3. Aviation Operations. An evaluation of aviation elements equipped with selected STANO equipment in night operations. Evaluations include the increased ability of pilots to fly at night, aerial observers to observe and adjust fire at night, and gunners to engage targets at night.

(b) Test Approach.

1. Test Design. In order to design the STANO II Preliminary Test, it was first necessary to state the test concepts, the assumptions and the test conditions that were to underlie the test structure. If either the assumption or the test conditions change, it will be necessary to make corresponding changes to the evaluation plan.

2. Test Concepts. The test provides for four (4) one week phases or runs, all of which are similar, with the exception of changes in the two scenarios. The test runs are as follows:

a. Zero STANO Equipment Run #1: This is the test run to supply base line data on troops performance without use of night vision devices. The base line figures derived from this run will serve as order-of-magnitude improvement indicator and serve as a control run for the first STANO equipment run.

b. STANO Equipment Run #2: This test run will be conducted with STANO Equipment (1st and 2nd generation and unattended ground sensors). Data collected from the run will be compared to the Zero run to determine what change in troop performance occurred through the use of STANO equipment.

c. Zero STANO Equipment Run #3: This test run will be identical to Run #1 with the exception rescheduled scenario events. This run will provide for replications of previous events and base line data for Run #4.

d. STANO Equipment Run #4: This test run provides replications of previous events and provide additional data to verify data collected from Run #2.

e. The test provides for two additional test runs. The purpose of these runs are to make up lost data and/or obtain additional data if required.

(c) Assumptions.

1. That the test elements and support elements will be typical in proficiency to average units.

2. That leadership and morale of the test unit will be typical of average units.

3. That the test area will provide a sufficient variety of terrain, vegetation, and climate to permit realistic testing.

4. That the test site and duration of the test will provide a sufficient variety of weather conditions, including ambient light level, to represent all-weather operations.

5. That the scenario, terrain, and other conditions will combine to provide a reasonably realistic simulation of combat conditions.

(d) Conditions:

1. The basic test elements will be a rifle company, elements of a battalion headquarters with supporing armor, aviation and artillery elements.

2. The test units support elements will have completed individual and unit training.

3. The test elements will have the required complement of TOE skills and equipment.

4. A sufficient number of each type of STANO equipment will be available.

5. There will be sufficient variation in routes and sequence of test events so that the test elements will not develop familiarity with the terrain and aggressor dispostions.

6. Aggressor will have sufficient training to represent unconventional opposing forces.

7. Each standard combat maneuver-reconnaissance patrol, combat patrol, position defense, assault, etc., will be repeated during each test under the variety of terrain, vegetation and climate available.

8. Live artillery, armor, mortar, and aerial fire support will be employed on each test.

9. Aerial troop movement will be conducted on each test.

10. For tests involving command, control and communications, skeltonized higher headquarters to at least the battalion level will be available.

11. Live aggressor elements will be used on each phase of each test except when live fire is conducted.

12. There will be live fire tests with tracer ammunition, aerial flares and white phosphorous to attempt to determine their impact on the various STANO devices, the duration of the effect, and the ability of the operator to observe the effect of fire.

13. Special maintenance means will be employed to ensure that availability of SEA NITEOPS equipment at 100% of the test BOI level for each test run.

(7) Test Environment.

(a) Tactical Concept. A recommended tactical concept for the test is contained in Annex B. A proposed scenario, depicting major events, was developed and is at Annex I. However, the Test Director must further develop and adjust scenario to apply to the specific terrain and units finally assigned. Operation orders and event lists must be developed for each exercise to set a realistic stage for the maneuver. As an aid to the Test Director in the preparation of the detailed scenario, a one (1) day detailed scenario for the 1st day of Scenario #1 was developed. The Test Director must reschedule the scenario events to provide for variation in events to develop a second scenario for Runs #3 and #4.

(b) Test Site. Criteria for the test site are in two categories:

1. Requirements.

a. Maneuver area approximately 10x10 kilometers.

b. Air facility available to include air traffic control personnel.

c. Some dense foliage within the maneuver area.

d. Impact area available.

2. Desirable Characteristics.

a. Varied topography and foliage.

b. Low ambient light level. (Absence of sky glow due to proximity of city lights)

c. Mild climate.

d. Network of various quality roads.

e. Permanent buildings for the Test Directorate.

f. Absence of unmarked holes, traps and other unusual hazards to safety at night.

3. USCONARC has designated Fort Bragg, North Carolina as the test site.

(c) Aggressor. Aggressor will be employed as realistically as possible based on the anticipated threat within the time period under consideration. Aggressor will be played without (low-intensity) STANO equipment. In developing the threat, the USACDC study on Soviet, Communist China, and North Korean night operations, "Special Operations by Communist Armies (U)" will be used. Controllers with the aggressor force will collect pertinent evaluation data. Annex J contains the data collection plan.

(d) Weapons Firing. Test units will be equipped to allow maximum use of blank fire and simulators. A minimum of one live fire exercise per test run will be conducted to provide necessary evaluation data.

(e) Safety. Current Army Regulations and command directives pertaining to field exercises and aerial gunnery will be followed. Specific safety requirements may be imposed by Test Director, balancing the requirement to conduct the test safely against the requirement to produce uncontaminated data.

(8) Training. Pre-test training considerations are contained in Annex F.

(9) Conduct of Test.

(a) Control Plan. The control plan is contained in Annex H. As an aid to the Test Director in the development of the final detailed control plan, a one (1) day detailed control plan for the 1st day of Scenario #1 is included in Annex H. This annex also contains recommended control radio nets.

(b) Methodology. This test will require an analysis of increased combat effectiveness based on the five functional areas of land combat. The test methodology is contained in Annex G.

(c) Analysis Plan - Annex K describes the analysis plan.

(d) Budgetary Considerations. A budget estimate is contained in Annex L.

(e) Major Milestones Schedule - Annex M.

6. (U) RESPONSIBILITIES OF MAJOR COMMANDS:

a. USAMC

(1) Provides STANO equipment.

(2) Provides NOTTS Team for training user personnel in unique SEA NITEOPS STANO equipment.

(3) Provides NOTTS Team for maintenance of unique SEA NITEOPS STANO equipment.

(4) Collects certain reliability and maintenance data on unique SEA NITEOPS items based on TAERS and other forms.

(5) Provides advisory and liaison assistance to the Test Director.

b. USCONARC

(1) Provides test directorate to include evaluation, data collection, controller and support personnel to plan the test, conduct pre-test training, conduct the test, and report findings, conclusions and recommendations.

(2) Provides necessary troop and administrative support for troop test and field experimentation.

(3) Provides maneuver area, work space and post facilities necessary to conduct the test.

(4) Provide logistical support for personnel and standard items of equipment involved in troop test and field experimentation.

c. USACDC Provides liaison and advisory assistance to the Test Director.

7. (U) CORRELATION: The SEA NITEOPS project is identified as

USACDC Action Control Number 14095V, and supports the following:

a. Army Concept Program Army-75.

b. Study "Combined Arms and Support-75", USACDC Action Control Number 4789.

c. Army Tasks:

(1) Mid-Intensity Conflict

(2) Low-Intensity Conflict, Type I

(3) Low-Intensity Conflict, Type II

d. Phase: Intelligence
Materiel
Organization
Evaluation

e. Function: Intelligence
Firepower
Mobility
Command, Control and Communications
Combat Service Support

Annexes:
A - Troop List
B - Doctrinal Guidance
C - Critical TOE Personnel and Equipment
D - Objectives, Subobjectives and EEA
E - Test Equipment
F - Training Plan
G - Methodology
H - Control Plan
I - Scenarios
J - Data Collection Plan
K - Analysis Plan
L - Budget Estimate
M - Milestones Schedule
N - Glossary
O - References
P - Distribution

DISTRIBUTION: Annex P, Distribution

ANNEX A TO PART I - STANO II TEST
TROOP LIST

TROOP LIST

PURPOSE: This annex outlines the personnel requirements for the conduct of the field test.

2. GENERAL: Personnel requirements for the field test are grouped as follows:

a. Advisory and Liaison Element (to be provided by USAMC/USACDC). Detailed breakdown is contained in Appendix 1.

b. Field Test Organization (to be provided by USCONARC). Detailed breakdown is contained in Appendix 2.

3. TOTAL PERSONNEL REQUIREMENTS:

	O	EM	TOTAL
a. Advisory and Liaison Element			15
b. Field Test Organization			
(1) Test Directorate Organization	102	58	160
(2) Test Troops	43	440	483
(3) Aggressor Troops	6	167	173
(4) Support Troops	37	376	413
Totals	188	1041	1229
c. Total personnel requirement			1229

4. CRITICAL TOE PERSONNEL AND EQUIPMENT - Annex C

Appendices
1--Advisory and Liaison Element
2--Field Test Organization

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ADVISORY AND LIAISON ELEMENT

1. PURPOSE: This appendix contains a detailed breakdown of the Advisory and Liaison Element.

2. BREAKDOWN:

Rank	Title	Source	Number
LTC	Infantry Advisor	USACDC-CAG	1
MAJ	Armor Advisor	USACDC-CAG	1
MAJ	Artillery Advisor	USACDC-CAG	1
MAJ	Aviation Advisor	USACDC-CAG	1
MAJ	Intelligence Advisor	USACDC-CSG	1
CIV	Operations Research Advisor	CORG	1
Military (MAJ) or Civilian	Army Materiel Command Representatives	USAMC	7
Military	STANO Study Directorate Representatives	USACDC- SSD	2
	Total		15

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FIELD TEST ORGANIZATION

1. PURPOSE: This appendix outlines the composition of the Field Test Organization.

2. ORGANIZATION: The Field Test Organization is composed of four elements as follows:

   a. Test Directorate Organization: Detailed breakdown in Tab A.

   b. Test Troops: Detailed breakdown in Tab B.

   c. Aggressor Troops: Detailed breakdown in Tab C.

   d. Support Troops: Detailed breakdown in Tab D.

3. ORGANIZATIONAL DIAGRAM: Tab E contains a schematic diagram of the Field Test Organization.

Tabs
A--Test Directorate Organization
B--Test Troops
C--Aggressor Troops
D--Support Troops
E--Schematic Organizational Diagram

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TEST DIRECTORATE ORGANIZATION

1. PURPOSE: This tab contains a detailed breakdown of the Test Directorate Organization.

2. BREAKDOWN:

Rank	Title	Number
BG	Field Test Director	1
COL	Deputy Field Test Director	1
COL	Evaluation Group Director	1
COL	Test Forces Commander	1
COL	Test Support Commander	1
LTC	Analysis Chief	1
LTC	Chief Controller	1
LTC	Chief Data Collector	1
LTC	Friendly Force Commander	1*
CPT	Aggressor Forces Commander	1**
LTC	Analysts	5
MAJ	Assistant Analysts	5
MAJ	Control Staff	7
MAJ	Collection Staff	6
CPT	Editorial Officer	1
CPT/LT	Controllers	34
CPT/LT	Collectors	36
	Sub Total	102

NCO	Controllers/Collectors (Sensors)	40
E-8	NCO Administration Chief	1
E-6	NCO Analyst Assistants	5
E-5	Reproduction/Drafting Specialist	2
E-4	Clerk Typists	10***
	Sub-Total	58
	TOTAL	160

Recapitulation

Officers.................102

EM.......................58

Total 160

NOTE:

*It is envisioned that the Commanding Officer, Infantry Battalion will act as the Friendly Force Commander.

**It is envisioned that the Commanding Officer, Aggressor Infantry Rifle company will act as the Aggressor Force Commander.

***It is envisioned that the Administration Branch in the Analysis Section will provide administrative support to the Test Directorate Organization.

DISTRIBUTION: Same as basic plan

TEST TROOPS

1. PURPOSE: This tab contains the personnel requirement for the Test Troops (Friendly Force).

2. TEST TROOPS:

			O	WO	EM	TOTAL
a.	Infantry.					
(1)	Hq & Hq Co, Inf Bn (-)	Authorized	16	2	160	178
	TOE 7-16G	Requested	7		36	43
(2)	Combat Spt Co (-)*	Authorized	6	0	144	150
	TOE 7-28G	Requested	2	0	45	50
	*Augmented by					
(a)	6 Sensor Specialists		0	0	+6	+6
(b)	2 Searchlight Sections				+6	+6
(3)	Rifle Co	Authorized	6	0	165	171
	TOE 7-18G	Requested	6	0	165	171
	Infantry	Subtotal	15		249	264
b.	Armored.					
(1)	Armored Cav Platoon (-)	Authorized	1	0	41	42
	TOE 17-107G	Requested	1	0	36	37
(2)	Tank Plat (M48A3 (Preferred)	Authorized	1	0	19	20
	TOE 17-37G	Requested	1	0	19	20
	Armored	Subtotal	2	0	55	57

NOTE:
*Augmentation figures are included in the company totals.

			O	WO	EM	TOTAL
c.	Aviation.					
(1)	Airmobile PLT (Light) (-) TOE 1-77	Authorized*	3	13	18	34
		Requested	3	13	18	34
(2)	Pathfinder Section TOE 1-101T	Authorized	2	0	13	15
		Requested	1	0	5	6
	Aviation	Subtotal	4	13	23	40
d.	Artillery.					
(1)	F. A. Battery 105 Towed TOE 6-157G	Authorized	7	0	104	111
		Requested	7	0	104	111
(2)	Battalion Operation-FDC Section TOE 6-156G	Authorized	1	0	18	19
		Requested	1	0	5	6
(3)	Liaison Section TOE 6-156G	Authorized	1	0	4	5
		Requested	1	0	4	5
	Artillery	Subtotal	9	0	113	122

Recapitulation

	O	WO	EM	TOTAL
Infantry	15	0	249	264
Armored	2	0	55	57
Aviation	4	13	23	40
Artillery	9	0	113	122
	30	13	440	483

NOTE:

*Two Aircraft (ABN Searchlights) with Crews provided by USAMC not included in above totals.

DISTRIBUTION: Same as basic plan

AGGRESSOR TROOPS

1. PURPOSE: This tab contains the personnel requirements for the Aggressor Troops.

2. AGGRESSOR TROOPS:

		O	WO	EM	TOTAL
Rifle Company	Authorized	6	0	165	171
Infantry Battalion					
TOE 7-18G	Requested	6	0	165	171

DISTRIBUTION: Same as basic plan

TAB D TO APPENDIX 2 TO ANNEX A TO PART I - STANO II TEST SUPPORT TROOPS

SUPPORT TROOPS

1. PURPOSE: This tab contains the personnel requirement for the Support Troops.

2. SUPPORT TROOPS:

			O	WO	EM	TOTAL
a.	Hq & Hq Company Inf Division Brigade	Authorized	24	4	142	170
	TOE 7-42G	Requested	24	4	142	170
b.	Forward Support Company, Mnt Bn, Inf Div	Authorized	4	2	124	130
	TOE 29-27G	Requested	4	2	124	130
c.	Forward Support Platoon (Trans Aircraft & Mnt Co)	Authorized	1	0	23	24
	TOE 55-89G	Requested	1	0	23	24
d.	Signal Support Detachment*	Requested	1	0	46	47
e.	Light Vehicle Driver Detachment (MTDA)**	Requested	1	0	41	42
		TOTAL	31	6	376	413

NOTES:

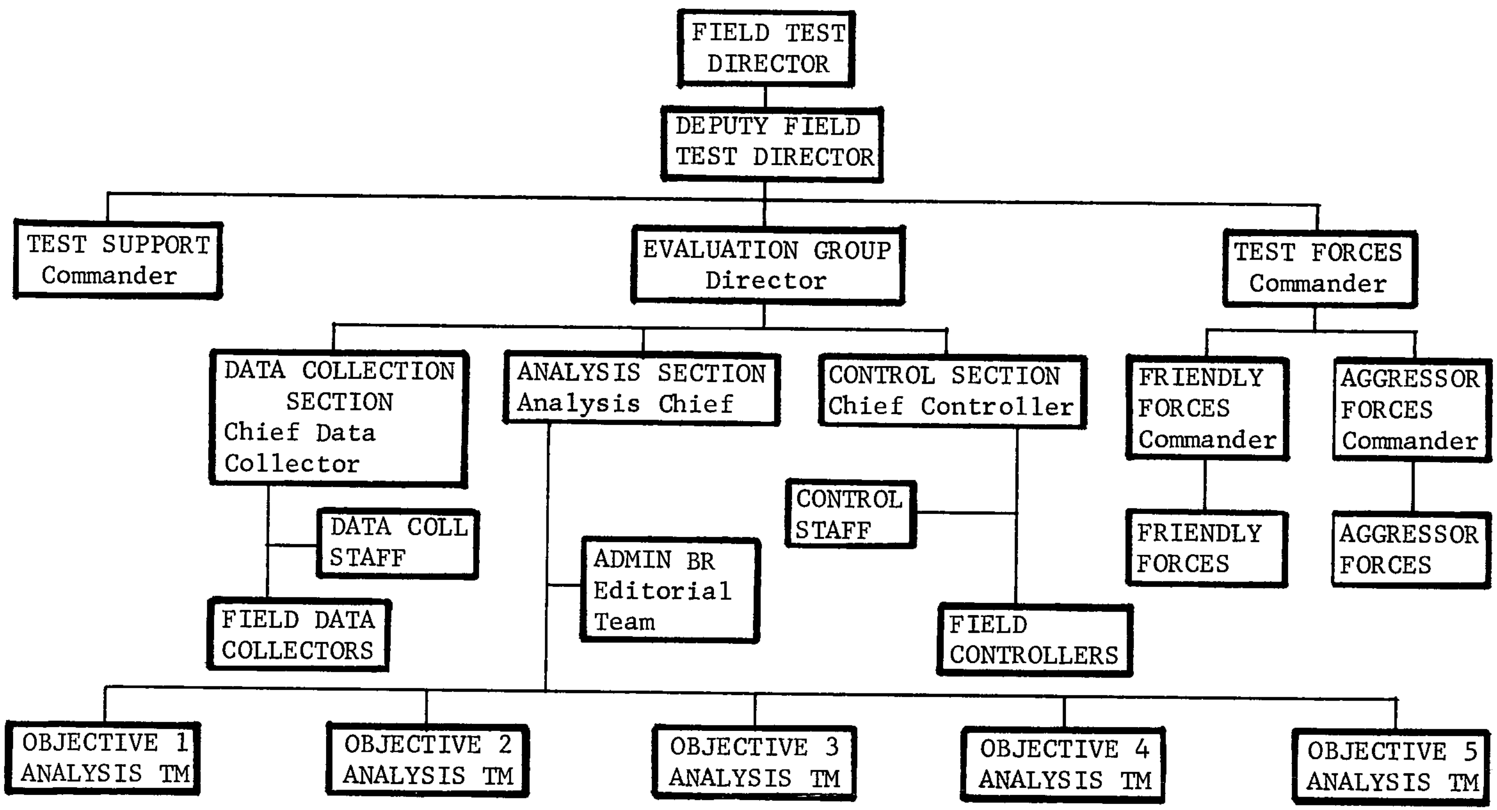
*A signal support detachment will be required to install, maintain, and operate a communications system for the Control Section. This detachment must provide thirty two (32) vehicular radio sets as specified in Annex C with radio operator/drivers to operate in the control radio nets outlined in Annex H. The radio sets should be mounted in ¼ ton trucks.

**A light vehicle support detachment equipped with the twenty two (22) vehicles specified in Annex C is required to provide transportation support for the Test Directorate Organization.

DISTRIBUTION: Same as basic plan

TAB E TO APPENDIX 2 TO ANNEX A TO PART I - STANO II TEST
SCHEMATIC ORGANIZATIONAL DIAGRAM

SCHEMATIC ORGANIZATIONAL DIAGRAM



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DOCTRINAL GUIDANCE

1. (C) GENERAL. The purpose of this annex is to summarize the current US Army night operations doctrine and to identify doctrinal goals, derived through experience and technical advances in equipment, that will be investigated during the STANO II Preliminary Test. This evaluation will identify, under controlled CONUS test conditions, the impact of selected and available STANO equipment intended to provide an increased night operations capability to US Forces in Southeast Asia.

2. (C) BASIC DOCTRINAL CONCEPTS.

a. Night operations in general are characterized by a greatly increased emphasis on active offensive operations oriented toward the defeat of known enemy targets. Night offensive operations conducted by highly maneuverable forces give the commander the flexibility he needs to seize the initiative and to time his operations to achieve maximum surprise and effect on the enemy. Conversely, defense of field positions and fixed installations will be enhanced through early detection of the enemy and effective application of supporting fires.

b. Materiel advances in the areas of night vision, combat surveillance, target acquisition and unattended ground sensors provide US Forces with greatly improved capabilities in night surveillance, mobility, and fire control. These improved capabilities give our forces a decided advantage over a relatively unsophisticated enemy during night operations in Southeast Asia.

c. Recognizing extensive reorientation of the Army Training Program to emphasize night operations as the long term objective, and that, initially, the material aids required for effective night combat will be expensive and in short supply, an interim concept for night operations is required.

d. This interim concept gives priority to the reconnaissance and surveillance roles with the objective of bringing maximum pressure to bear upon the enemy with limited night operation resources. The keystones of this concept are the reconnaissance and surveillance elements of the maneuver force. These elements are especially organized, trained, and equipped to ensure the effective

performance of day and night reconnaissance/surveillance functions. The surveillance element may operate continuously during the hours of darkness to detect enemy activity and to maintain surveillance of enemy detected by the reconnaissance element. The mission of the reconnaissance element is to exploit intelligence acquired by the surveillance element, by seeking out the enemy, harassing him and maintaining contact, if possible, until the enemy can be engaged by the main maneuver force during daylight. The reconnaissance element should make maximum use of all supporting fires to contain, harass, and if possible, to destroy the enemy prior to the arrival of the main maneuver force.

e. Under this concept all combat operations are supported by an improved capability for rapid and continuous collection, processing and dissemination of intelligence. In the area of contact, day and night surveillance devices and automatic remote sensors are exploited to the maximum. Air and ground reconnaissance elements will conduct continuous night reconnaissance to locate and disrupt enemy activities, to harass significant enemy forces or, if feasible, to fix them for engagement and destruction by ready reaction forces or supporting firepower.

f. The efficiency of the reconnaissance and surveillance effort will permit conservation of the main maneuver force resources by directing their attention to the most lucrative targets. A significant portion of the maneuver force can be disposed in an immediate alert posture ready for deployment by air or ground vehicle to exploit opportunities developed by the reconnaissance and surveillance elements.

g. Emphasis will be placed on clandestine operations prior to establishment of contact in order to retain the element of surprise. Primary emphasis will be placed on passive viewing and surveillance devices with supplementary illumination restricted to the nonvisible spectrum to the maximum commensurate with the operational mission and the tactical situation. Indirect illumination with white light may be used to raise ambient light levels and white light in the direct mode may be used to disorient and blind the enemy once contact has been established.

h. This concept is equally applicable to night combat operations at the battalion, brigade and division levels.

i. Implementation of this concept is predicated upon thorough training of the individual soldier to develop his proficiency and to instill confidence in his ability to fight effectively at night. He must receive training in the proper care and employment of the devices intended to accentuate or supplement his physical senses

during night combat.

3. (U) CURRENT DOCTRINE.

a. General. The capability of a unit in combat to accomplish its mission may well depend upon its ability to fight successfully at night. Night combat is a normal, integral part of all operations. Night operations include all military activity (offense, defense, retrograde, movement, combat support, combat service support), conducted at night. Operations in other conditions of reduced visibility require the use of many of the techniques of night operations. Night operations are undertaken for four fundamental reasons:

(1) To attain the initiative by continuing to fight or breaking contact at the most advantageous time and place.

(2) To exploit the advantages of darkness, to achieve surprise, and to avoid heavy losses which might be incurred in daylight operations over the same ground.

(3) To compensate for advantages held by an enemy with superior forces and air superiority.

(4) To counter or neutralize the enemy's night operating capability.

b. Night operations, regardless of the scale on which they are conducted, basically depend on the ability of the individual soldier to perform his assigned task. Heretofore, combat associated activities, such as rest, movement and preparation for combat, predominated during hours of darkness, and night combat was treated as a special operation because of individual limitations. The degree to which these limitations can be offset or removed, is based on how much added ability can be gained by the proficient employment of night operating aids, such as battlefield illumination, night vision devices, sound ranging sets, unattended ground sensors, radars and aerial surveillance equipment to accomplish assigned missions.

c. Combat at night or under conditions of reduced visibility is characterized by a reduced ability to place aimed fire on the enemy, difficulty in movement, in maintaining control, and difficulty in maintaining contact with enemy forces. The consideration for organizing forces at night should be no different than those used in daytime. As the limitations imposed by the equipment are reduced or eliminated by the use of night vision devices or battlefield illumination, the more closely night attacks will resemble those conducted during daylight hours.

d. Techniques may differ, but doctrine for night operations is the same as for daylight operations. Night attacks are used to exploit or continue the attacks made during the day. Planning and control measures are more detailed for the night defense. Counterattacks or spoiling attacks executed at night must avoid complicated schemes of maneuver or intricate coordination procedures.

e. FM 31-36 (Test), Night Operations, provides current interim doctrinal guidance for commanders and staff in the employment and support of infantry, airborne infantry, airmobile infantry, and armor units in night operations for each echelon at battalion level and below.

4. (C) DOCTRINAL GOALS.

a. General. A fundamental requirement for STANO equipment is to overcome the limitations imposed on friendly forces by the absence of light, thus providing a means whereby night operations can be conducted in a manner and with a degree of proficiency approximating daylight operations. These aids should be used in such a manner as to give maximum assistance to friendly forces while impeding the enemy effort to the greatest extent possible. Current night operations doctrine reflects the problems posed by the attendant reduction in our ability to observe the enemy, terrain and our own forces. In comparison with daytime operations, night operations are characterized by a more simplified scheme of maneuver, more shallow objectives, additional control measures such as release points, limits of advance, and early reconnaissance and detailed planning. Surprise and simplicity are of major importance in planning a night attack. More effective terrain orientation and identification of friendly units will permit greater dispersion and the selection of deeper objectives. Effective night reconnaissance will improve operational flexibility and permit us to exploit our successes.

b. Intelligence. The success of any operation may well depend on the intelligence available to the commander. Accurate and timely intelligence requirements do not change with the coming of darkness. The commander's three major intelligence needs still exist: knowledge of the enemy capabilities, the weather and the terrain. Future night operations must be supported by an improved capability for rapid collection, processing and dissemination of intelligence, gathered from all sources. STANO equipment must be utilized so as to maximize its long range reconnaissance, surveillance and target acquisition capabilities.

c. Mobility. The successful fulfillment of this function requires that mounted and dismounted troops be able to move and navigate during darkness or periods of reduced visibility with near

daylight speed and accuracy. The ability of commanders to control and coordinate the movements of their units is essential and must be improved. Offensive requirements include the ability to change tactical configurations, conduct attacks and rapidly reorganize forces when required. Defensive requirements include maneuver actions to accomplish actions such as acquire targets, escape detection and destruction, cover critical enemy penetrations, permit the use of all available supporting fires and destroy enemy forces.

d. Firepower. Individual and crew served weapons night vision sights improve the capability of the individual soldier to aim, and to engage the enemy at ranges beyond detection range of the unaided eye. STANO devices also aid in reducing ambush dangers, or being engaged in an unexpected close-in firefight. Although artillery fire support fundamentals remain basically unchanged, operational techniques must be modified to consider the inherent capabilities and limitations of available fire support elements during periods of darkness. Proper employment of appropriate night operational techniques, night vision aids, and target acquisition equipment will reduce losses in effectiveness due to poor visibility. The goal of SEA NITEOPS Operational Evaluation is that fire support during periods of darkness will approximate the responsiveness currently available in daylight operations.

e. Command, Control, and Communications. STANO devices improved the means of exercising control at night. These devices can be used for signalling, marking unit positions, and identifying those terrain features used as control measures. Tactical commanders at all echelons require reliable, responsive, flexible, and hopefully, secure communications systems to insure positive command control of their forces. These systems must be equally effective during night operations as well as during daylight operations to adequately support the fire and maneuver requirements of combat elements.

f. Combat Service Support. Combat service support for night operations is generally the same as for daylight operations. Emphasis is placed on insuring continued combat service support, and must be as responsive as that support furnished for daytime operations.

5. (C) EMPLOYMENT CONSIDERATIONS. To employ STANO devices in modes that best facilitate the accomplishment of an individual task or unit mission three basic considerations will dictate the optimum modes of operation. First, the night potential of the enemy must be examined for implied restraints. Second, restraints imposed by the friendly situation must be identified. Third, concepts and doctrine will have to be modified to fit environmental conditions encountered.

a. Enemy Potential. The potential of the enemy to achieve a

night operational capability will vary with the intensity or level of conflict. This potential will dictate the restraints to be imposed upon friendly employment of active STANO devices. In a low intensity conflict in an underdeveloped area, the enemy is normally proficient at night operations. Night operations are his preferred method of operation in order to counterbalance his weakness in air, artillery and more sophisticated weaponry. However, US Forces will be freer to employ the entire spectrum of STANO equipment against this enemy because he will not possess the countermeasures a more sophisticated enemy could be expected to employ. Once the insurgent becomes aware of the new capabilities the introduction of these devices provides, it is expected that they will adjust their night operations accordingly. Countermeasures are discussed in paragraph 6 below.

b. Friendly Situational Restraints. Friendly operations are often undertaken at night to achieve security and gain tactical surprise. This is particularly true of night attacks. Just as increased communications activities tend to compromise surprise and security for a daylight attack, increases in active STANO activity tend to alert the enemy that a night attack is pending. The utilization of, and restraints imposed on, the STANO equipment, must be consistent with the details of the proposed plan of operations. This consistency involves the detailed analysis of all factors involved to enable the commander to deny the enemy any intelligence and yet facilitate his own operation.

c. Environmental Factors. Night operations using STANO equipment will have to be modified to fit special environmental conditions encountered. Operations may be conducted in jungles, mountains, deserts, artic areas, reverine, and coastal regions. Each has its characteristics which may require some modifications in the techniques of employment of STANO devices.

(1) Worldwide Threat. A contunuing struggle between East and West through Communist engendered "Wars of National Liberation" will prevail during the time frame 1969-1970. Established Communist nations will continue to grant political, economic, and military support to Communist, or dissident factions enganged in low intensity conflicts against governments of underdeveloped or politically unstable nations. These Communist instigated domestic wars, and Communist involvement in internal distrubances appear to be the form of armed conflict posing the principal threat to the Free World.

(2) Potential Areas of Operation. The US is presently engaged in a low intensity type conflict in the Republic of South Vietnam. Other most likely areas where low to mid-intensity conflicts may involve US Forces could be the remainder of Southeast Asia, the Korean Peninsula, Africa (South of the Sahara Desert), and Latin America.

(3) South Vietnam. The conflict in South Vietnam has its own peculiarities and environmental differences which have resulted in the introduction of new tactics, new equipment and new objectives. The conflict is characterized by the absence of a "front line", ineffective means of differentiating between friendly and enemy elements, frustrating occurrences such as the loss of high value aircraft by relatively inexpensive rockets and munitions, and the enemy fully utilizing the environment to his advantage--especially during darkness or periods of reduced visibility. A great deal has been learned from the use of First Generation equipment and combat night operations in South Vietnam. Much of this data, ideas, and recommendations will be tested and evaluated in the STANO II field test. A brief summarization of enemy and environmental conditions and its effect on present and future requirements regarding STANO equipment is discussed below:

(a) The climate ranges from humid tropical areas where monsoon rains inundate lowlands, to rugged mountains covered with jungle and triple canopy growth. The vegetation ranges from sparse planing in rice paddies to impassable jungle.

(b) The Communist forces in South Vietnam consist of Viet Cong guerrillas, Viet Cong main force units and North Vietnam Army units. The guerrillas normally consist of small groups of men recruited from the local populace. The quality of their training and organization varies considerably. The Viet Cong main force units and North Vietnamese Army units represents a more conventional threat. They do not depend directly on the local populace for support and engage in larger scale operations and use more conventional tactics.

(c) In response to these unique factors and actual combat experience, equipment is required which provides surveillance, target acquisition and night observation capabilities for night operations equivalent to those available for daylight operations.

6. (C) COUNTERMEASURES.

a. It has long been proven that as any new weapon or technique is introduced, means are soon developed to counter it. Even though the enemy in Southeast Asia is not credited with possessing a high degree of technology, it would be to our advantage to assume that the overall enemy capability in night operations will at least parallel ours. Reports have indicated that most of the Communist Bloc countries have expended considerable effort on research, development, and manufacture of night vision equipment. As a result, their forces should be fairly extensively equipped with effective detection devices. Countermeasures can be categorized as either active or passive.

b. Active Countermeasures. The most effective means of countering image intensification equipment is by illuminating the battlefield. Image intensification equipment contains an automatic mechanism which blocks out high imputs of light. Thus the equipment cannot be used when the ambient light reaches certain levels of intensity. Searchlights are particularly useful for this purpose since their illumimation can be controlled within fairly well defined limits of light intensity and the size of the area illuminated. The enemy, however, may not be able to use searchlights for this purpose due to logistical problems and may well rely on flares or other illuminating ordnance, or fires. Other active contermeasures which could be used by the enemy are jamming (against radars and unattended ground sensors) and damage or destruction of our STANO equipment. Although individual and crew served weapons sights, binoculars and goggles are not very vulnerable to damage or destruction, large devices such as radars are. It can be expected that the enemy may attempt to damage or destroy radar installations as an active countermeasure.

c. Passive Countermeasures. An inexpensive method of countering STANO equipment is by training personnel to take advantage of the limitations of the equipment and avoiding its capabilities. Rain, fog, dust, and smoke reduce the effectiveness of the STANO equipment. Thus the enemy may prefer to conduct operations during rain, fog and smoke to reduce the effectiveness of our STANO equipment. In addition, the enemy will soon learn that darkness does not provide security from observation and that use of cover and concealment is as necessary at night as during the day. Proper use of cover and concealment will also reduce the effectiveness of our STANO equipment.

7. (U) TRAINING. Training considerations are contained in Annex F.

8. (U) ORGANIZATIONAL CONCEPT. The proposed organization to include technique of employment to be used in STANO II are contained in Appendix 1.

9. (U) BASES OF ISSUE. The proposed basis of issue to be evaluated during the field test is contained in Appendix 2.

10. (U) CONCEPT OF EMPLOYMENT OF SENSORS. The concept of employment of unattended ground sensors is contained in Appendix 3.

APPENDICES:
1 - Organizational Concept
2 - Equipment Allocation
3 - Concept of Employment for Sensors

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ORGANIZATIONAL CONCEPT

1. PURPOSE: This appendix outlines the organization to be evaluated during the conduct of the STANO II Preliminary Test.

2. SUPPORTING DOCUMENTS: Documents to support the Plan of Test are identified in Annex O, these references include:

a. SEA NITEOPS Equipment Manual (Published separate from Plan of Test).

b. Doctrinal Training References (Published separate from Plan of Test).

c. Applicable field and technical manuals.

3. ORGANIZATIONAL CONCEPT: The organizational concept of the STANO II Preliminary Test consists of the evaluation of the current SEA Organization through representative elements of infantry, artillery, armor and aviation with appropriate supporting units.

4. TEST ORGANIZATION: A schematic diagram of the test organization is at Tab A and discussion of the current SEA organization is at Tab B.

TABS:
A - Test Organization
B - Current SEA Organization

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TEST ORGANIZATION

1. PURPOSE: This tab outlines the test organization.

2. TEST UNITS:

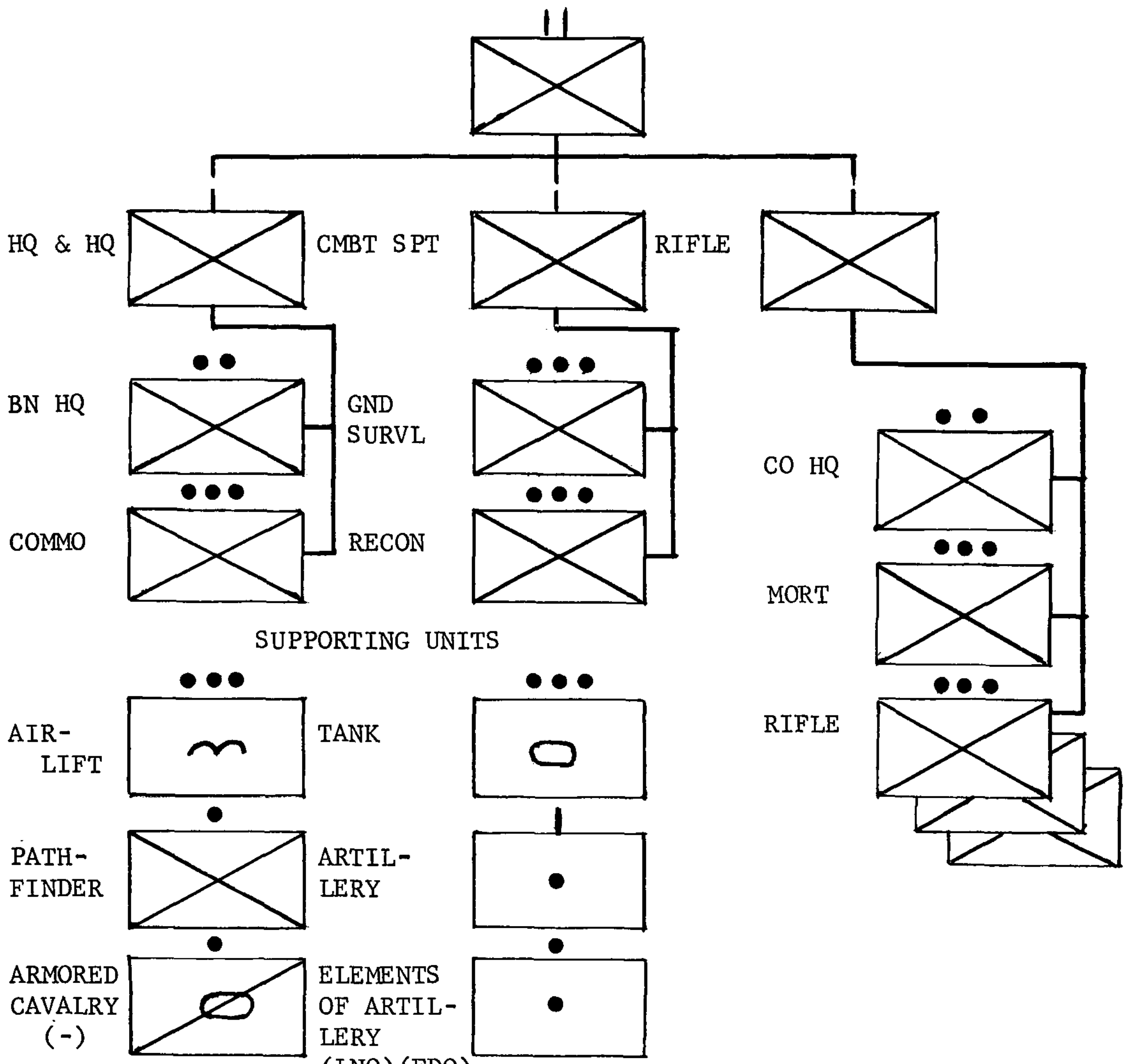

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Figure B-1

TAB B TO APPENDIX 1 TO ANNEX B TO PART I - STANO II TEST
INFANTRY BATTALION (CURRENT SEA ORGANIZATION)

INFANTRY BATTALION (CURRENT SEA ORGANIZATION)

1. PURPOSE: This tab outlines the organization which will be evaluated during STANO II Preliminary Test, using a proposed BOI of STANO equipment. It is the infantry battalion as currently organized in Vietnam.

2. ORGANIZATIONAL CONCEPT: The battalion operating in Vietnam is based upon a modification of TOE 7-15G. It consists of a headquarters and headquarters company, a combat support company and four rifle companies (Figure B-1). The mission of the battalion remains that of closing with and destroying the enemy through the application of firepower and maneuver. This test will evaluate the effectiveness of this organization when equipped with varying mixes and densities of STANO equipment.

3. CAPABILITIES: The battalion is capable of conducting daylight or night operations. The additional STANO capability of the battalion is intended to increase the ability of the battalion to operate during periods of limited visibility toward the point at which the night operations capability of the battalion approximates its daylight capability. The fourth rifle company has been added in Vietnam to allow greater flexibility during the conduct of offensive or defensive operations. Its addition to the battalion permits companies to be rested during sustained operations, and compensates for the increased requirement in low intensity conflicts for base security missions while conducting combat operations. The capabilities of the battalion, in addition to those stated above, are the same as those set forth in current training texts.

4. TECHNIQUES OF EMPLOYMENT: The infantry battalion in low intensity warfare is typically employed within an assigned battalion area of operations, with the mission of locating and destroying enemy forces within the area. The battalion will normally operate from a battalion base camp or "fire base". The battalion command post, elements of the combat support company, a direct support artillery battery, and one rifle company reserve/security force are normally located at the fire base, while the remaining three rifle companies operate in assigned areas within the battalion area of operations. Currently, the rifle companies conduct sweeps and patrol actively during the day, but generally find it necessary to go into defensive perimeters at night, and conduct patrols and ambushes primarily for the purpose of insuring the unit's security. This curtailment of

operations during the night is due to the decreased ability of the unit to locate the enemy, to deliver effective fires on him, and to maneuver against him. The addition of combat surveillance, target acquisition, and night observation equipment to the battalion should increase the battalions ability to find, fix, and destroy the enemy. Patrols, ambushes, and even combat sweeps should be conducted at night with an aggressiveness approaching that obtained during daylight. In brief, night operations should resemble daylight operations as closely as possible.

5. STANO EQUIPMENT ALLOCATION: An equipment allocation Chart is at Appendix 2.

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APPENDIX 2 TO ANNEX B TO PART I - STANO II TEST
EQUIPMENT ALLOCATION

EQUIPMENT ALLOCATION

1. PURPOSE: This appendix outlines the STANO major equipment to be evaluated in the test.

2. ALLOCATION:

EQUIPMENT ALLOCATION	NITE VIS GOGGLES	T-7 IR BINO'S	AIMING LIGHT	STARLIGHT SCOPE	MINISCOPE	METASCOPE	HAND HELD VIEWER	AN/PPS-9 RADAR	CSWS	NOD, MR	NOD, LR	AN/PPS-5 RADAR	M-18 BINOCULAR	AN/VSS-3 SLT	AN/VSS-2 SLT	AN/MSS-3 SLT	AIRBORNE SLT	TK METASCOPE KIT	PORTATALE	GSID	MINISID	PIRID	MAGID
BN HEADQUARTERS		13																					
BN HQ SEC		8																					
BN COMMO PLAT		5																					
CMBT SUPPORT CO	6	7	5	5	1	2	2	1		1	2	2				2			12	8	12	3	3
GRND SURV PLAT		7				2					2	2				2			12	8	12	3	3
RECON PLAT HQ	1							1		1													
SCOUT SEC	2		2	4			2																
RIFLE SQUAD	3		3	1	1																		
RIFLE COMPANY	36	8	27	12	9	5	5	4		3													
CO HQ SEC	2	3				1	1	1															
RIFLE PLAT HQ	1					1	1	1															
3 RIFLE SQUADS	9		9	3	3																		
WEAPONS SQUAD	1			1																			
RIFLE PLAT HQ	1					1	1	1															
3 RIFLE SQUADS	9		9	3	3																		
WEAPONS SQUAD	1			1																			
RIFLE PLAT HQ	1					1	1	1															
3 RIFLE SQUADS	9		9	3	3																		
WEAPONS SQUADS	1			1																			
WEAPONS PLAT HQ	1	1				1	1																
MORTAR SEC HQ		1								3													
3 MORTAR SQUADS		3																					
ARTILLERY BTRY		22		4						4													
BTRY HQ SEC		4		4																			
COMMO SEC		2																					
4 FO SEC'S		4								4													
FIRING BTRY		8																					
AMMO SEC		4																					
ARTY BN ELEMENTS		3																					
OPNS/FD SEC		1																					
LNO SEC		2																					
TANK PLATOON		5				1			5				5		5			5					
PLAT HQ, TK#1		1				1			1				1		1			1					
TKS# 2,3,4&5		4							4				4		4			4					
ARM CAV PLATOON	6		3	3	3		1	1	9	1			4	4									
ARM CAV PLAT HQ	1						1	1	1	1			1	1									
SCOUT SEC	2			2					4				2	2									
TANK SEC		3							3														
RIFLE SQUAD	3		3	1	1				1				1	1									
PFDR SECTION	2				2																		
AIRLIFT PLATOON																	2						
TOTAL	50	62	35	24	13	8	8	6	14	9	2	2	9	4	5	2	2	5	12	8	12	3	3

3. ADDITIONAL TEST EQUIPMENT NOT ALLOCATED BY UNIT:

a.	ADSID	32
b.	ACOUSID	16
c.	ARFBUOY	2
d.	Noiseless Button Bomblets	200
e.	Relay System SARS	1
f.	Tethered Balloon Antenna	1

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APPENDIX 3 TO ANNEX B TO PART I - STANO II TEST
CONCEPT OF EMPLOYMENT OF UNATTENDED GROUND SENSORS

CONCEPT OF EMPLOYMENT OF UNATTENDED GROUND SENSORS

1. (U) PURPOSE: This appendix outlines the concept of employment of unattended ground sensors during the conduct of STANO II Preliminary Test.

2. (C) CONCEPT OF EMPLOYMENT:

a. The basic mission of the test organization for each of the STANO II Preliminary Test runs will be to search its assigned area of operations and to destroy the enemy personnel and materiel detected. The use of unattended ground sensors will expand the size of the area the test organization will be able to place under surveillance. Sensors will be employed during the pilot test, and the STANO test runs. During each STANO test run, sensor emplacement activity will be concentrated during the 1st, 2nd and 3rd days or nights of scenario activity. Sensor strings and arrays will be employed during the course of these test runs using both airdropped and hand-emplaced sensors. Systems for extension of the transmission ranges of the sensors will also be considered. The types of sensors for employment in the STANO II test have been selected to closely parallel the devices used in Field Evaluation "HIGH GEAR".

b. Two products of the "HIGH GEAR" evaluation are the development of recommended techniques of employment for the sensors and the development of techniques for measuring the effectiveness of sensors when used in the simulated tactical environment of a field test.

c. The testing of unattended ground sensors in conjunction with SEA NITEOPS devices and standard night operating aids will provide for an evaluation of the employment of this equipment used as an integrated system.

d. During the course of each run, sensor strings will be used for the following tasks:

(1) Area surveillance

(2) Route surveillance

(3) Base area defense

(4) Landing zone monitoring

(5) Extension of listening posts and observation posts

(6) Convoy protection

(7) Ambushes

(8) Tunnel monitoring

3. (U) UNATTENDED GROUND SENSORS: Annex E contains a description of the unattended ground sensors to be used in STANO II Preliminary Test. Further guidance on doctrine and techniques of employment proposed for the types of unattended ground sensors to be tested in STANO II is detailed in the USACDC Training Text 31-1, Unattended Ground Sensors, October 1968 and Tab A to this Appendix.

Tab:
A--Sensor Doctrinal Guidance

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TAB A TO APPENDIX 3 TO PART I - STANO II TEST
SENSOR DOCTRINAL GUIDANCE

(C) SENSOR DOCTRINAL GUIDANCE (U)

1. (C) General. Intrusion detector sensors are adaptable for use in a wide variety of military operations including offensive operations, defensive operations, and special surveillance missions. In each application, sensors are used essentially to obtain information of enemy activity. Since the unit also has other intelligence-collecting means and devices, sensors must be integrated into the overall system. Each individual situation must be analyzed so that sensors are used where the anticipated additional information they can produce is commensurate with the required expenditure of manpower and resources. Doctrinal guidance contained in this appendix has been extracted from USACDC Training Text 31-1 and USACDC Plan of Test, Field Evaluation HIGH GEAR, dated 8 Jan 69.

2. (C) Choice of Sensors. The variety of types of sensors (seismic, acoustic, magnetic or infrared) offer flexibility in selection of sensors for special application. The choice of a type of sensor depends on such factors as composition of soil, vegetation, and the tactical situation. Often it will be desirable to use different types of sensors in combinations to refine intelligence or screen out false alarms. Additional flexibility is offered within each type of sensor by such characteristics as size, range, operating life, operational mode, and method of delivery. It is therefore necessary to analyze each specific situation to determine the most appropriate sensors to be used.

3. (C) Use of Information. The information produced by sensors is of no tactical value unless it can be received, interpreted, and acted upon in a timely manner. Sensors must be monitored by devices, either manual or automatic, and information analyzed, interpreted and transmitted to the operational unit which must respond to the intelligence. Normally, this unit will have the capability to react immediately with appropriate firepower and/or maneuver forces.

4. (C) Offensive Operations.

a. General. Sensors are used in offensive operations to locate the enemy in order to bring him under attack. The sensors are emplaced in locations where the enemy is believed to be deployed tactically, or in areas through which he is expected to move. When the enemy's presence is detected, preplanned actions are initiated.

b. Target Acquisition. See Figure B-2 In the targeting application, sensors are emplaced in appropriate areas where it is suspected the enemy is located or will pass through; such likely areas are those for concentration of troops, suspected rocket or mortar positions, defiles, trails, or intersections. The sensors must be monitored continuously. Mortar and artillery concentrations and close air support missions are preplanned so that immediate application of firepower can be made when enemy presence is detected.

c. Combat Clearing. See Figure B-2 The combat clearing operation visualizes emplacement of strings of sensors (prior to the start of the operation) across the most probable avenues of enemy withdrawal. Plans are also made for the emplacement of secondary strings of sensors as the situation develops. Planned countermeasures are initiated when the location and direction of enemy withdrawal is determined.

d. Ambush. See Figure B-3 Remotely-fired ambushes may be sprung along hidden jungle trails through the use of hand-emplaced sensors at intervals along the trail. Command-detonated claymore mines can be emplaced to cover the killing zone; when the sensors indicate the presence of a suitable target, the mines are detonated. A variation of this application involves the use of sensors to alert an ambushing force that an enemy is approaching. With information on the size and disposition of the enemy troops, the ambush force can wait until the optimum time to open fire.

e. Landing Zone Monitoring. See Figure B-4 Under certain tactical conditions, a commander may elect to preserve the element of surprise by making an airmobile assault landing without firing a pre-assault preparation. Sensors are emplaced at probable enemy positions adjacent to potential landing zones several days prior to the operation; they must be monitored until the actual airmobile assault. Information furnished by the sensors should be a factor in deciding whether or not to execute the landing, whether or not to fire a preparation, and in the selection of the specific zones to be used.

5. (C) Defensive Operations.

a. General. Sensors are used in defensive operations to detect the location and approach of the enemy. The techniques of sensor utilization in offensive and defensive operations are quite similar. In both offensive and defensive operations, friendly forces are actively attempting to locate the enemy and sensors are employed along likely avenues of approach and in probable assembly areas to secure advance warning of an enemy attack.

b. Base Camp Security. See Figure B-5 Sensors are used in base camp security to supplement other means of surveillance. A combination of various types of sensors can be installed around the perimeter of an area in an arrangement tailored to the terrain, vegetation, soil composition, and tactical situation. The use of sensors is coordinated with sentries and other detection systems and integrated along with barriers and defensive fires into an overall defense plan. Sensors with a long operating life are most appropriate for employment in base camp security.

c. Convoy Security. See Figure B-6 Ambush detection for convoys can be provided through sensors. Several days prior to the use of insecure routes by large convoys, seismic and acoustic sensors can be air dropped into the area best suited for enemy ambush. The sensors are monitored constantly by the commander responsible for convoy security. Upon receiving indication of enemy activity, the convoy can be alerted and the enemy ambush force attacked by fire and/or maneuver as appropriate.

d. Extension of Listening/Observation Posts. Sensors may also be used to extend listening/observation post capabilities. Manpower limitations in a tactical situation often preclude the establishment of listening/observation posts in the desired numbers or locations. Seismic sensors, paired with other types of sensors for confirmation of detections, can be hand-emplaced as soon as it is dark enough to conceal activities. They can also be emplaced by air to gain greater coverage and additional reaction time, or to reach otherwise inaccessible areas. Sensors may also be used to enhnace flank security elements. In a company defensive position, sensors may be used to supplement contact patrols in covering a gap between company positions and to augment flank security protection.

6. (C) Special Surveillance Missions.

a. General. The applications discussed above have generally involved the use of relatively few sensors and the development information which is acted upon immediately. However, there are other situations in which the objective is either to acquire information regarding a pattern of enemy activity or to monitor enemy activity within an extensive area. These are primarily surveillance missions, although the intelligence produced in many cases may be applied directly to offensive and defensive operations.

b. Enemy Base Camp. See Figure B-7 One problem in counterguerrilla operations is preventing the enemy from moving back into a base area after it has been cleared by friendly forces (since it is not always possible to destroy the base area or render it completely unusable). It is also usually impractical to leave troops in

the base area to prevent enemy re-entry. The result is that frequently base areas are cleared, only to be reoccupied by the enemy a short time later. Sensors, though they will not keep the enemy out of the area, can be used to monitor the base area and provide information of enemy activity. Strings of sensors may be left behind by friendly troops, across probable avenues of movement in the enemy base area. These sensors are monitored to obtain information on the volume and direction of enemy movement in and around the base area and to provide the basis for planning countering actions at the most propitious time.

c. Route Surveillance. See Figure B-6 Sensors can be used for surveillance of avenues of approach and infiltration routes for the primary prupose of establishing patterns of enemy activity. Sensors may be used in appropriate combinations and arrangements to monitor enemy traffic over a variety of routes of approach such as roads, waterways, ridgelines, and natural defiles. Infrared sensors are used to cover the streams while seismic, acoustic, and magnetic sensors are used along the other routes. There are several specific surveillance missions all within this application. Sensors can be used to monitor routes leading to and from the village in order to obtain information regarding clandestine movements after curfew. Information of this sort might be valuable in locating local enemy rendezvous areas and weapons caches. Sensors can be used throughout a network of enemy infiltration routes in border areas to monitor enemy movement and develop information for use in planning offensive actions.

d. Tunnel Monitoring. See Figure B-8 Occasions may arise during tactical operations which may be exploited to deceive and later trap or destroy the enemy. One such operation involves tunnel monitoring. When a tunnel complex is located and a thorough search is conducted, unattended hand-emplaced seismic sensors can be emplanted and monitored to provide friendly forces with early warning of re-entry into the area by the enemy. A proposed concept for employment of sensors would be to emplace sensors adjacent to the entrances and/or exits. Where it is possible to identify the underground route of the tunnel, seismic sensors may be emplaced in the ground over the tunnel path to detect movement. This enables the commander to call for pre-planned fires and/or commit reaction forces.

7. (C) Limitations on Sensor Use. The number of possibilities for employment of sensors in route and small-area surveillance roles is limited only by the user's imagination and ability to discriminate against false alarms. When sensor devices are employed in tactical operations, the probable effect of the ambient false alarm source within the contemplated area of operation must be carefully considered. Ground forces operating in remote areas, away from most

sources of false alarms such as other electronic equipment, construction equipment, low-flying aircraft, vehicular traffic, and friendly inhabitants, will have the greatest opportunity to exploit the potential of sensor devices. It will be to their advantage to carry sensor devices and use them where it is feasible. However, the opposite would be true for units operating in or near populated areas where the false alarm rate would be so high as to preclude most operational uses of these devices. In this case, the limited benefits derived would probably not warrant the expense of transportation and maintenance as well as the basic cost of the item.

8. (C) Sensor System Use. In each application, sensors are used essentially to obtain information of enemy activity. The type and amount of enemy activity expected, and the type of information desired, will influence the design of the sensor fields to be used. As a rule, the sensor locations should be as close to the enemy route, trail, or target areas as possible. Camouflage requirements and emplacement techniques will generally dictate the specific distances required. Generally, a spacing of 200-300 meters is adequate for squad-size groups, while 500-600 meters is adequate spacing for single vehicles. These distances are guides and will vary with the size of enemy unit, number of vehicles in convoy, and operational terrain.

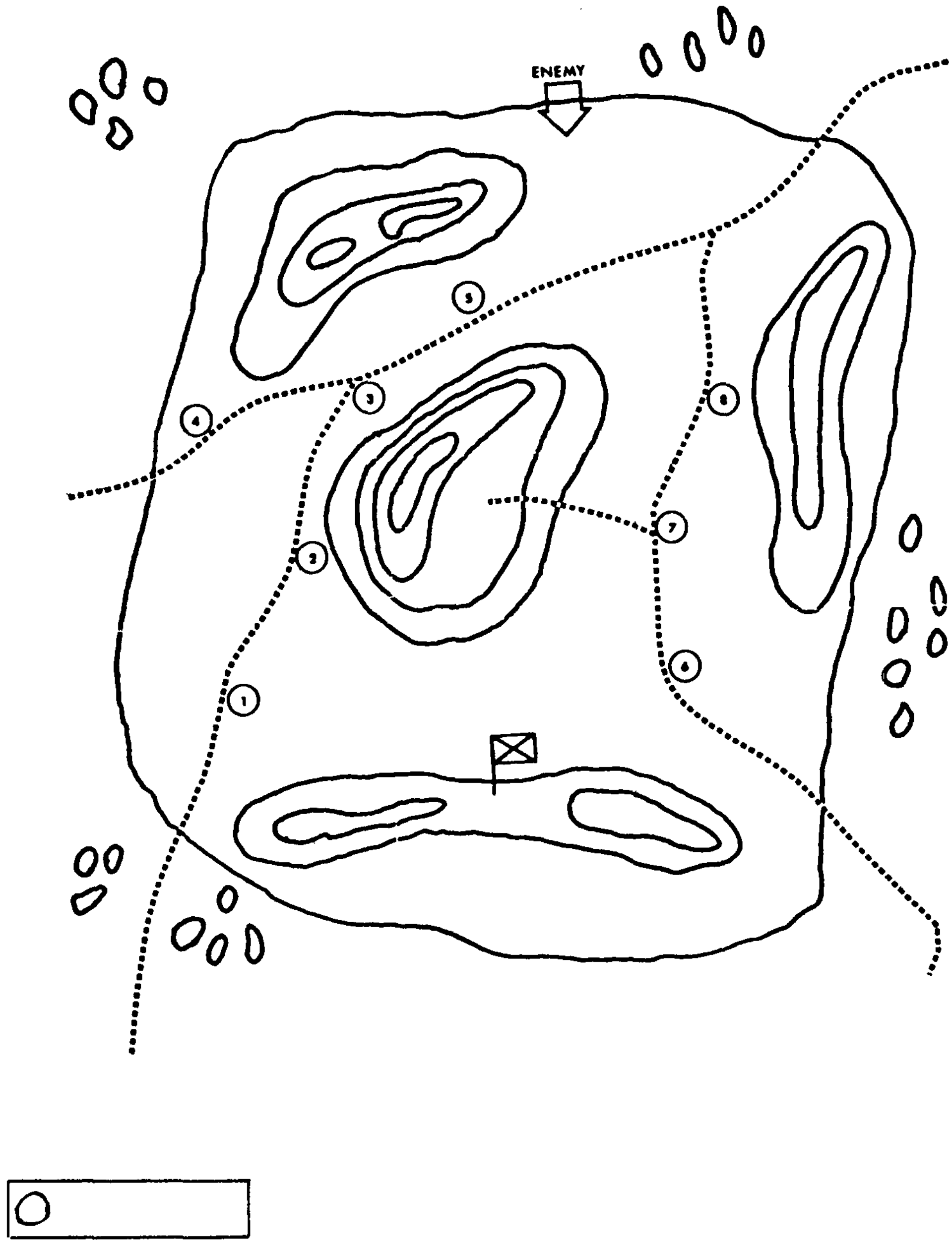
9. (C) Sensor Emplacement. Sensors will be actively used to locate the enemy. Sensor arrays will be emplaced in areas where the enemy is known or suspected to be located or will pass (for example, areas for concentration of forces or suspected position (rockets, mortars) and movement traces (trails, intersections)). They will be monitored continuously so that each detection will be evaluated. Quick response is the key to success in reacting to a detection classified as a target, if this is the course of action deemed appropriate. The response can be to use indirect fire, make a note for future reference, or alert friendly elements located near by. This mixture is called a "sensor array". The type target expected to be detected, and its location, will influence the selection of the sensors in the array. It is recommended that a minimum of three sensors be grouped for a sensor array. The groupings shown in Table B-1 below are not intended to define the only sensor groupings possible, but to point out flexibility to the commander; sample emplacements are diagrammed in Figures B-2 through B-8.

(C) SENSOR GROUPINGS

Group	Type	Number	Location	Target
I	Seismic Magnetic Infrared	1 1	Trail Trail	Personnel with Weapons
II	Seismic Acoustic	2 2	Base Camp Base Camp	Personnel
III	Acoustic Infrared	2 2	Waterway Waterway	Boats
IV	Acoustic	1-4	Landing Zone	Personnel

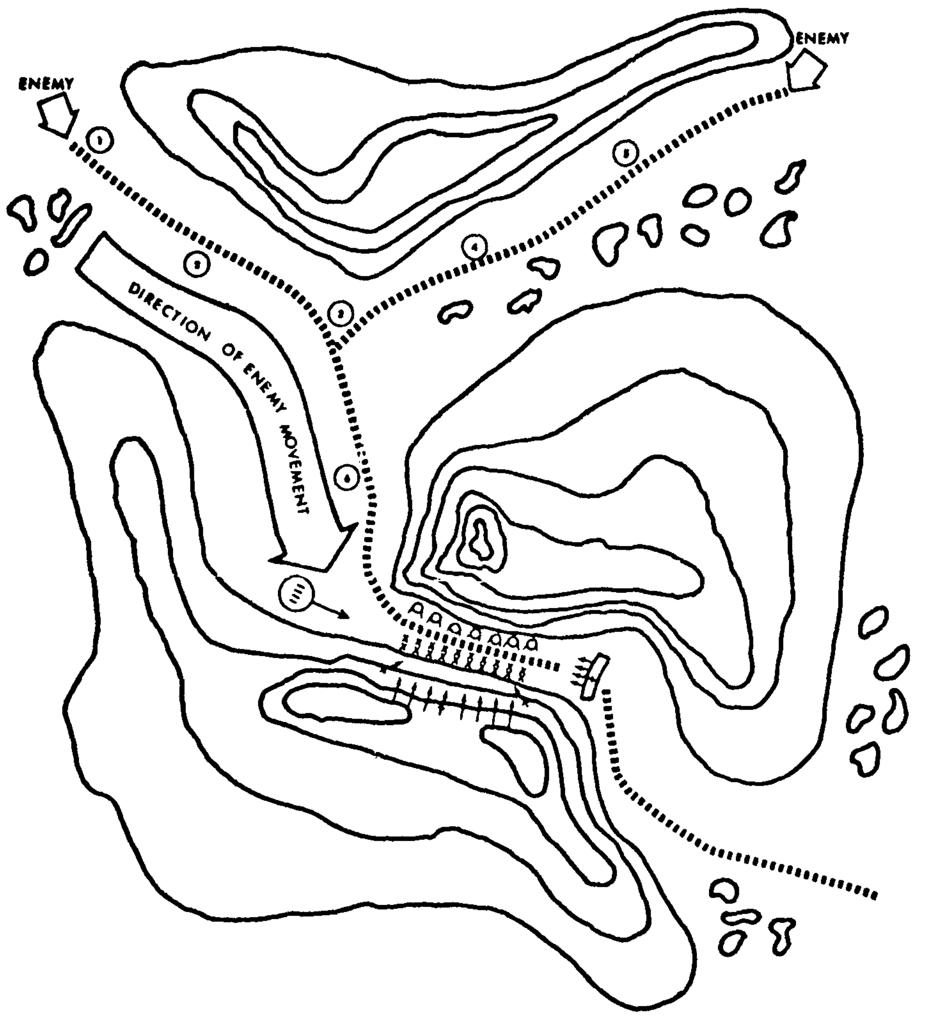
DISTRIBUTION:
Same as basic plan

TABLE B-1 SENSOR GROUPINGS



NOTE: A feasible sensor array for either combat clearing operations or target acquisition missions.

Figure B-2 (C) TARGET ACQUISITION/
COMBAT CLEARING ARRAY (U)



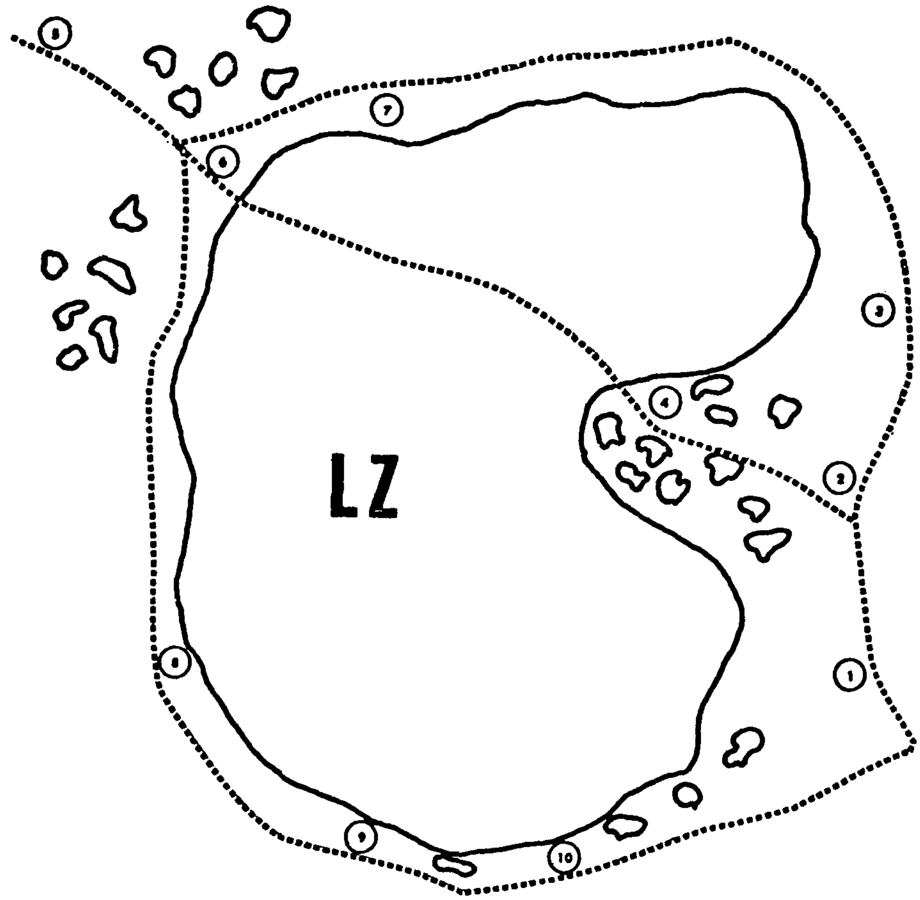
A

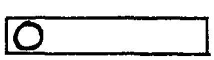
X

O

NOTE: A feasible sensor array for conducting an ambush, day or night.

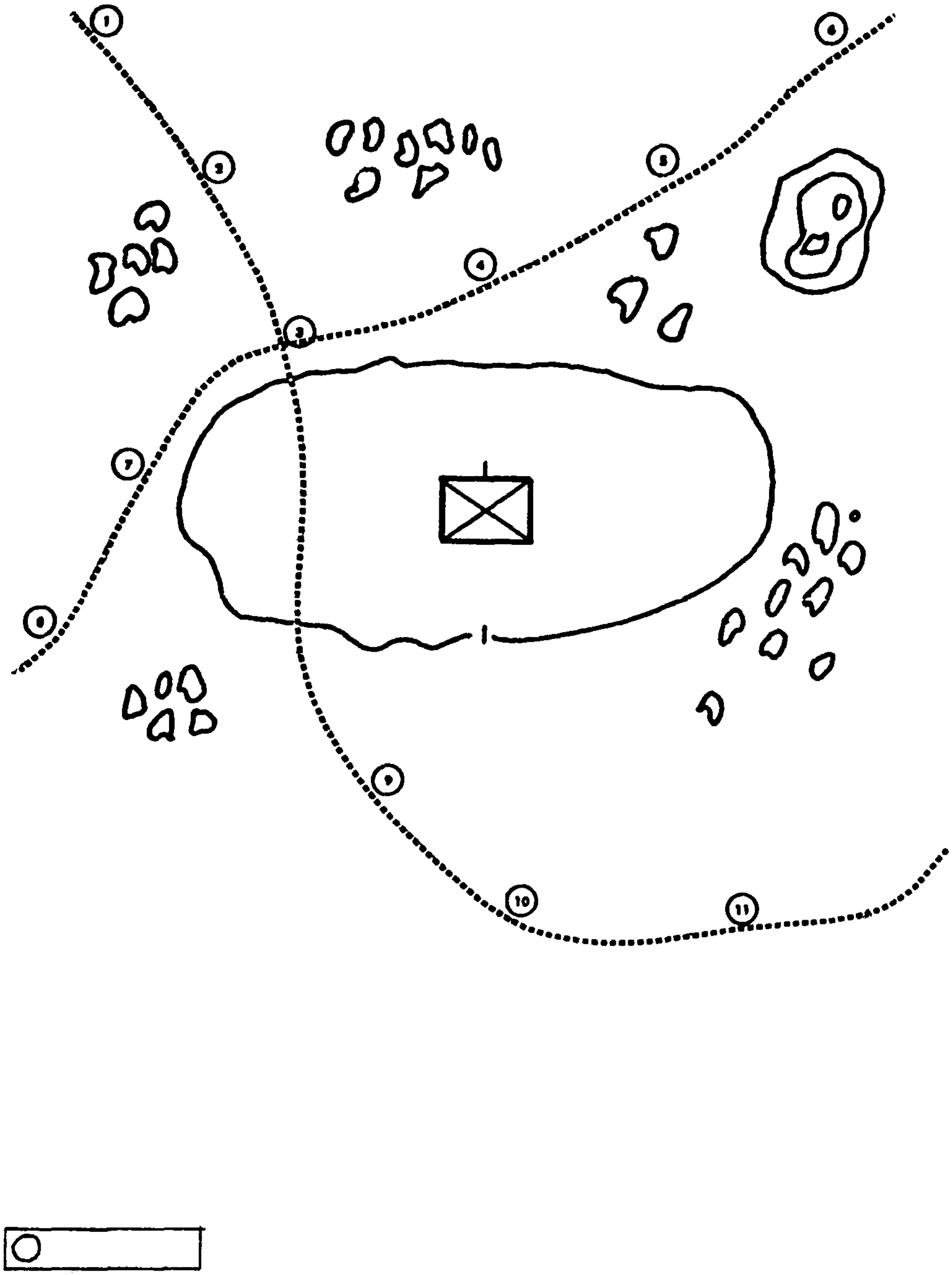
Figure B-3 (C) AMBUSH (U)





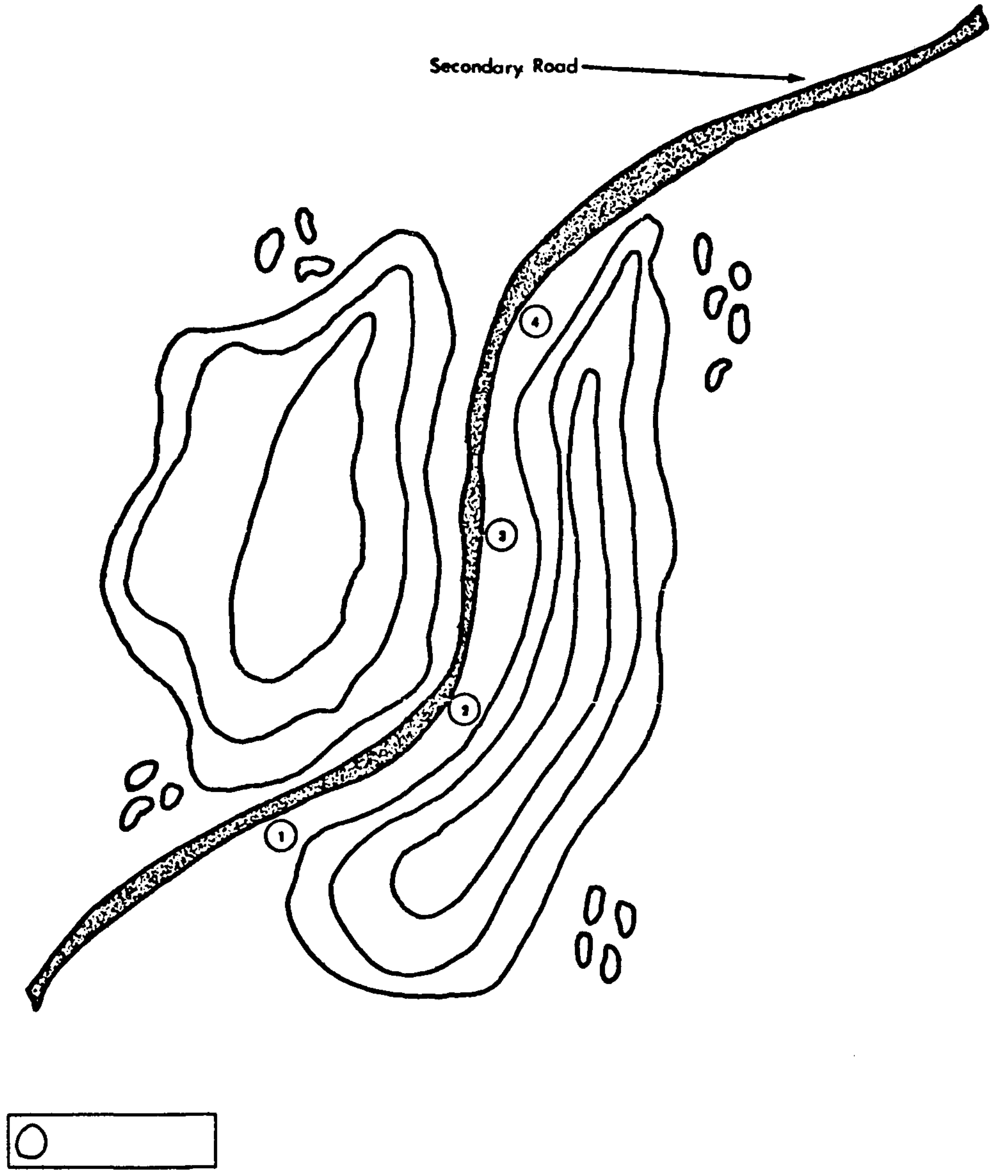
NOTE: A feasible sensor array for monitoring a landing zone tentatively selected for an air-mobile operation.

Figure B-4 (C) LANDING ZONE MONITORING (U)



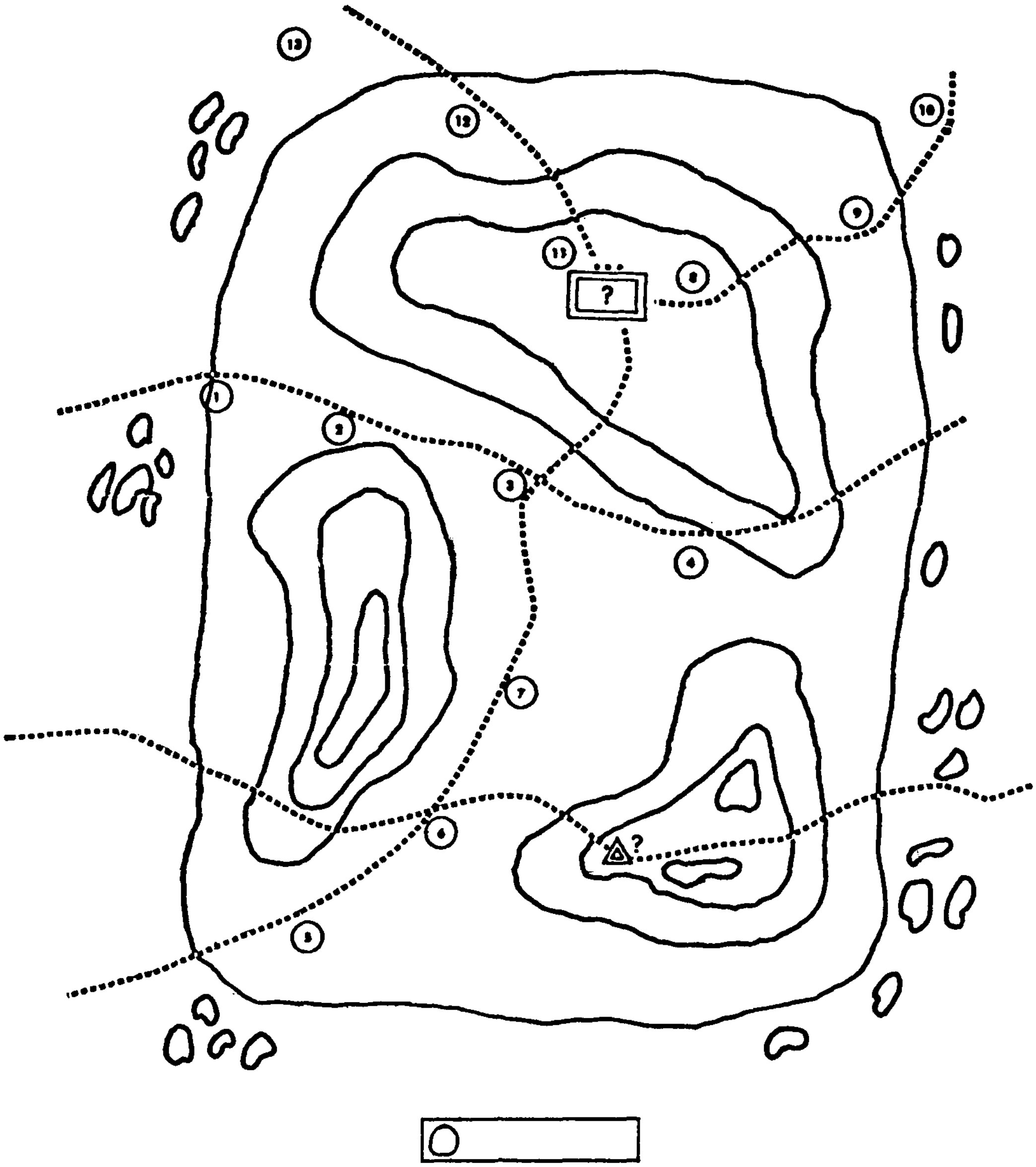
NOTE: A feasible sensor array for implementing base camp security.

Figure B-5 (C) BASE CAMP SECURITY (U)



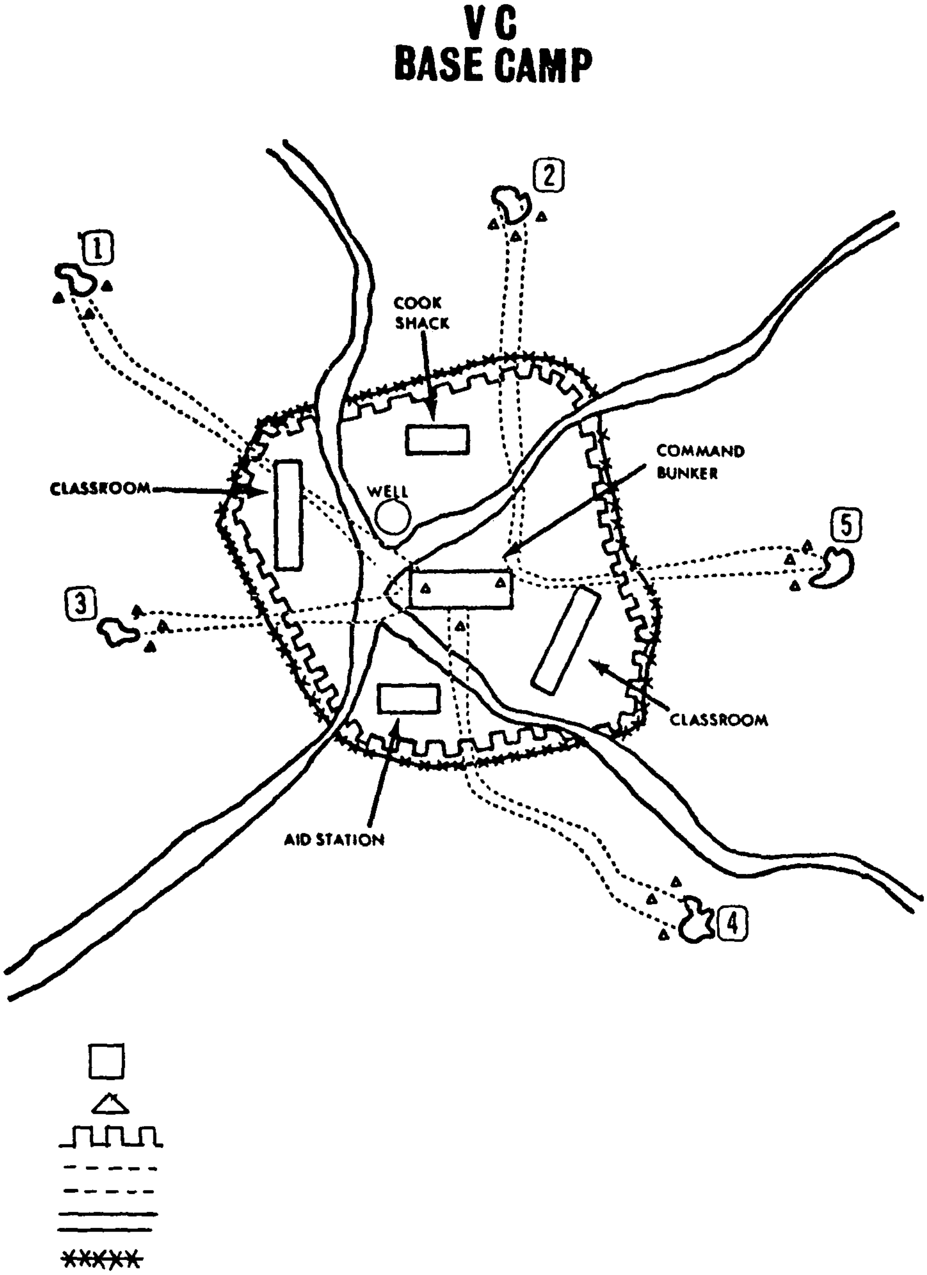
NOTE: A feasible sensor array for providing convoy security and/or route surveillance. Sensors are placed adjacent to roadway in areas that are condusive to enemy ambushes.

Figure B-6 (C) CONVOY SECURITY AND/OR ROUTE SURVEILLANCE (U)



NOTE: A feasible sensor array for enemy base camp surveillance. Sensors nearest base camp may be air-implanted or delivered by mortar or artillery fire. Delivery accuracy would then become a factor.

Figure B-7 (C) ENEMY BASE CAMP SURVEILLANCE (U)



NOTE: A feasible sensor array for tunnel monitoring missions.

Figure B-8 (C) TUNNEL MONITORING (U)

CRITICAL TOE PERSONNEL AND EQUIPMENT

1. PURPOSE: This annex discusses critical TOE Personnel, TOE Equipment, and Special Equipment required within the test units to support the STANO II Preliminary Test. SEA NITEOPS equipment and unattended ground sensor requirements are contained in Annex E.

2. DEFINITION: It is expected that the full complement of personnel listed in the troop list, as well as the TOE equipment assigned to each test unit will be provided for the duration of the test. Within each of these units, certain personnel and equipment have been identified as critical for conduct of the test.

a. Critical Personnel are those in tactical leadership positions, those possessing technical skills (MOS) and personnel who have received extensive training in the operation of the more complex STANO equipment. Their presence is required for the entire test period and they should be stabilized for the duration of the test. A detailed list of test troops is furnished at Appendix 1. Those personnel considered critical for the test are identified by an asterisk.

b. Critical Equipment

(1) "G" Series TOE Equipment Considered Essential. It is considered essential that each of the test units be provided the full complement of "G" series equipment included in the TOE elements listed in Annex A. However, for those elements such as the battalion headquarters section where less than the full section is required the essential equipment must be determined by the Test Unit Commander.

(2) Armored Cavalry Platoon (-). The Armored Cavalry Platoon (-) is being specially structured around the four (4) M113 APC's equipped with AN/VSS-3 1KW searchlights and the three (3) M551 Seridan Tanks which will be available for the test. It is not considered worth the cost to move in either the M106 mortar track or the M114 reconnaissance vehicle listed in the unit TOE especially for the test. The Armored Cavalry Platoon will be equipped with the following vehicles:

(a) Platoon headquarters with one (1) M113 APC

(b) Scout section with two (2) M113 APC

(c) Tank section with three (3) M551 Sheridan Tanks

(d) Rifle squad with one (1) M113 APC

(e) Support squad - deleted.

(3) Airlift Platoon (+). The Airlift Platoon of the Airmobile Company, light, TOE 1-77G is normally equipped with eight (8) UH-ID Helicopters. For the purposes of this test, two (2) UH-ID Helicopters equipped with Airborne Searchlights will be added to the original eight (8) UH-ID's. The additional aircraft and their crews will be provided by USAMC.

3. SPECIAL EQUIPMENT: Special equipment is required to support test control, data collection, communications, and administration. The following major requirements have been identified:

a. Special Night Vision Equipment. To facilitate navigation and movement so the controllers and data collectors can keep up with the maneuver forces, first generation night vision equipment will be required. Aggressor units will not have night vision equipment. Data collectors and controllers will be required to fill out data forms and perform other administrative tasks without compromising the light discipline of a scenario event. A system must be devised and equipment provided for this purpose. The following list identifies the types and quantities of special equipment that will be required for the collectors and controllers.

	ITEM	QUANTITY
(1)	Night Vision Sight, Individual Served Weapon (Starlight Scope)(AN/PVS-2)	37
(2)	Metascope Assembly, (AN/PAS-6)	13
(3)	Binocular, Electronic T-7 (AN/PAS-5) with IR Headlight Filter Kit	54
(4)	Flashlight with Red Filter	85

b. Signal Support Detachment Equipment Requirements*

(1)	AN/VRC-47 with truck, utility, ¼ ton	6
(2)	AN/VRC-48 with truck, utility, ¼ ton	23
(3)	AN/VRC-49 with truck, utility, ¼ ton	3

* Required to support radio nets contained in Appendix 2, Annex H.

c. <u>Light Vehicle Support Detachment Equipment Requirements</u>.

ITEM	QUANTITY
(1) Truck, utility, ¼ ton	12
(2) Truck, cargo, 3/4 ton	8
(3) Truck, cargo, 2½ ton	2

d. <u>Training Ammunition</u>. Special attention must be given to the sound and flash simulators and the quantities of blank and training ammunition that will be required for the test. Simulation of the firing of mortars and artillery pieces and simulation of the burst of mortar and artillery rounds will be required to test the performance of certain items of STANO equipment. Blank and training ammunition will be required for test troops and aggressor troops for four weeks of unit training, the pilot test, and four successive test runs of five days each.

e. <u>Administrative Support</u>. Office space is required for the Test Directorate Organization, particularly during the pre-test planning period. Classroom facilities will be required for the conduct of indoor instruction. Printing support is required to produce final scenarios, detailed control plans, data collection forms, and other materiel pertinent to the conduct of the test. Watches, flashlights, clipboards, pencils, paper, pads, and identification arm bands are items that data collectors and controllers will require in the performance of their duties.

Appendix:
1 - Test Troop List

APPENDIX 1 TO ANNEX C TO PART I - STANO II TEST
CRITICAL PERSONNEL

CRITICAL PERSONNEL

The table below lists the personnel required within each unit of the test troops. Those personnel considered critical for conduct of the test have been marked with an asterisk.

TEST UNITS	JOB TITLE	GRADE	MOS	NUMBER OFF	NUMBER EM
Battalion Hq & Hq Co (-)	Subtotal			7	36
Battalion Headquarters	Battalion Commander*	05	01542	1	
	S-3*	04	02162	1	
	Commo Officer*	01	00200	1	
	S-2*	03	59310	1	
	Command Sergeant Major*	E9	11G50		1
Headquarters Section	S-3 Air*	03	52163	1	
	LNO*	02	01542	2	
	Intelligence Sergeant*	E7	11F50		1
	Operations Sergeant*	E8	11F50		1
	Asst Operations Sergeant*	E6	11F40		1
	Chemical NCO*	E5	54B40		1
	Clerk Typist*	E4	71B30		2
	Medical Aidman*	E4	91B20		4
	Senior Radio Operator*	E4	05B20		1
	Light Truck Driver*	E3	11B10		8
	Radio Operator*	E4/3	05B20		3
Battalion Commo Platoon	Commo Chief*	E7	31G40		1
	Wire Foreman*	E5	36K40		1
	Senior Radio Mechanic*	E5	31B20		1
	Radar Mechanic*	E4	26C20		2
	Senior Field Wireman*	E4	36K20		1
	Light Truck Driver*	E3	36K20		1
	Field Switchboard Operator*	E3	36K20		2
	Field Wireman*	E3	36K20		4
Battalion Hq & Hq Co (-)	Subtotal			2	48
Battalion Ground Surv-eillance Plat	Platoon Leader*	01		1	
	Survl Plat SGT*	E6	17K40		1
	Sensor Section SGT*	E5			1

TEST UNITS	JOB TITLE	GRADE	MOS	NUMBER	
				OFF	EM
	Radar Section SGT*	E5	17K40		2
	Chief Monitor Operator*	E5	05B20		1
	Senior Radar Operator*	E5	17K40		2
	Searchlight Section Chief*	E5	17E40		2
	Radar Operator*	E4	17K40		4
	Portatale/Sensor Specialist*	E4/3			6
	Searchlight Crewmen*	E3	17E20		4
	Light Truck Driver*	E3	11B10		1
Reconn Platoon	Platoon Leader*	01/02	01542	1	
	Platoon Sergeant*	E7	11B40		1
	Scout Driver*	E4	11B20		1
Scout Section	Squad Leader*	E6	11B40		2
	Assistant Squad Leader*	E5	11B40		2
	Scout Driver*	E4	11B20		4
	Scout Observer*	E3	11B10		4
Rifle Squad	Squad Leader*	E6	11B40		1
	Team Leader*	E5	11B40		2
	Auto Rifleman*	E4	11B20		2
	Grenadier*	E4	11B20		2
	Light Vehicle Driver*	E3	11B10		1
	Rifleman*	E3	11B10		2
Rifle Company	Subtotal			6	167
Company Hq Section	Company Commander*	03	01542	1	
	Executive Officer	01/02	01542	1	
	First Sergeant*	E8	11G50		1
	Supply Sergeant	E6	76Y40		1
	Communications Chief*	E5	31G40		1
	Company Clerk	E5	71H20		1
	Armorer	E4	76Y30		1
	Equip Reports Clerk	E4	71T20		1
	Field Radio Mechanic	E4	31B20		1
	Supply Clerk	E3	76Y10		1
	Field Wireman	E3	36K20		2
	RAD Telephone Operator	E3	11B10		2
Rifle Platoon Hq	Platoon Leader*	01/02	01542	3	
	Platoon Sergeant*	E7	11B40		3
	RAD Telephone Operator	E3	11B10		3

TEST UNITS	JOB TITLE	GRADE	MOS	NUMBER	
				OFF	EM
9 Rifle Squads	Squad Leader*	E6	11B40		9
	Team Leader*	E5	11B40		18
	Auto Rifleman	E4	11B20		18
	Grenadier	E4	11B20		18
	Rifleman	E3	11B10		27
3 Weapons Squads	Squad Leader*	E6	11B40		3
	Gunner*	E4	11B20		6
	Machine Gunner*	E4	11B20		6
	Ammunition Bearer	E3	11B10		6
	Assistant Gunner	E3	11B10		6
	Assistant Machine Gunner	E3	11B10		6
Weapons Platoon	Platoon Leader*	01/02	01542	1	
	Platoon Sergeant*	E7	11C40		1
	RAD Telephone Operator	E3	11C10		1
81mm Mortar Section Hq	Section Leader*	E6	11C40		1
	ForwardObserver*	E5	11C40		3
	Fire Dir Cmpt*	E5	11C20		2
	RAD Telephone Operator	E3	11C10		3
3 81mm Mortar Squads	Squad Leader*	E5	11C40		3
	Gunner*	E4	11C20		3
	Ammunition Bearer	E3	11C10		6
	Assistant Gunner	E3	11C10		3
Artillery Battery	Subtotal			7	104
Artillery Battery Hq	Battery Commander*	03	01193	1	
	First Sergeant*	E6	13Z50		1
	Mess Steward	E7	94B40		1
	Supply Sergeant	E6	76N40		1
	Motor Sergeant	E5	63B40		1
	First Cook	E5	94B20		2
	Armorer	E4	76N30		1
	Battery Clerk	E5	71H20		1
	Cook	E4	94B20		2
	Maint Data Sr	E4	71B20		1
	Powerman	E4	52B20		1
	Repair Parts Sr	E4	76S20		1
	Wh Vehicle Mech	E4	63B20		1
	Cooks Appr	E3	94A10		1
	Mechanic Helper	E3	63A10		1
	RDO Telephone Operator	E3	13A10		1

TEST UNITS	JOB TITLE	GRADE	MOS	NUMBER OFF	NUMBER EM
Communication Squad	Comn Chief*	E5	31H40		1
	Senior Switchboard Operator	E4	36A10		1
	Senior Wireman	E4	36A10		1
	Switchboard Operator	E3	36A10		1
	Wireman	E3	36A10		3
4 FO Sections	Forward Observer*	01/02	01193	4	
	Reconnaissance Sgt*	E5	13B40		4
	RDO Telephone Operator*	E3	13A10		4
Firing Battery Hq	Executive Officer*	01/02	01193	1	
	Assistant Executive Off*	01/02	01193	1	
	Chief Firing Battery*	E7	13B40		1
	Fire Direction Cmpt*	E5	13B20		1
	Chart Operator *	E4	13E20		2
	Artillery Recorder	E4	13A10		1
	RDO Telephone Operator	E3	13A10		2
6 Howitzer Sections	Chief of Section*	E6	13B40		6
	Gunner*	E5	13B40		6
	Assistant Gunner*	E4	13B40		6
	Prime Mover Driver	E4	13A10		6
	Cannoner	E3	13A10		30
Ammunition Section	Chief of Section*	E6	13B40		1
	Ammo Handler	E3	13A10		6
	Light Truck Driver	E3	13A10		4
Artillery Battalion Elements	Subtotal			2	9
Artillery LNO Section	Artillery LNO*	02	01193	1	
	Artillery Recon Sergeant*	E8	13B40		1
	Radio Opr/Lt Truck Drv.*	E4/3	13A10		1
	Light Truck Driver*	E4/3	11B10		2
Operations/ Fire Direction Section	Assistant S-3 *	02	52162	1	
	Fire Direction Cmpt*	E5	18B20		2
	Chart Operator*	E4	18B20		2
	RTD*	E3	18B10		1
Armored Cavalry Platoon (-)	Subtotal			1	36
Armored Cav Platoon (-)	Platoon Leader*	01/02	01204	1	
	Accut Driver*	E4	11D20		1
Scout Section	Section Leader*	E6	11D40		1
	Squad Leader*	E6	11D40		1
	Assistant Squad Leader*	E5	11D40		1

TEST UNITS	JOB TITLE	GRADE	MOS	NUMBER	
				OFF	EM
Scout Section (Cont'd)	Scout Driver*	E4	11D20		4
	Scout Observer*	E3	11D10		4
Tank Section	Platoon Sergeant*	E7	11D40		1
	Tank Commander*	E6	11E40		2
	Gunner*	E5	11E20		3
	Tank Driver*	E5	11E20		3
	Loader*	E3	11E10		3
Rifle Squad	Squad Leader*	E6	11B40		1
	Team Leader*	E5	11B40		2
	Auto Rifleman*	E4	11B20		2
	Grenadier*	E4	11B20		2
	Per Carrier Driver*	E4	11B20		1
	Rifleman*	E3	11B20		3
Tank Platoon	Subtotal			1	19
Tank Platoon	Platoon Leader*	02	01203	1	
	Platoon Sergeant*	E7	11E40		1
	Tank Commander*	E6	11E40		3
	Assistant Tank Commander	E5	11E40		2
	Gunner*	E5	11E20		3
	Tank Driver*	E5	11E20		5
	Loader	E3	11E10		5
Airlift Platoon (-)	Subtotal			16	18
Airlift Platoon Hq	Platoon Commander*	03	01981	1	
	Platoon Sergeant*	E6	67N40		1
	Light Truck Driver*	E3	67A10		1
Airlift Section	Section Commander*	02	01981	2	
	Helicopter Pilot*	WO	062BO	13	
	Crew Chief*	E5	67N2F		8
	Machine Gunner*	E4	11B2F		8
Pathfinder Section	Subtotal			1	5
Pathfinder Section	Section Commander*	02	71542	1	
	Section Sergeant*	E6	11B4Y		1
	Pathfinder*	E4	11B4Y		4

OBJECTIVES, SUBOBJECTIVES AND ESSENTIAL ELEMENTS OF ANALYSIS

1. PURPOSE: This annex contains the Stano II objectives, subobjectives and the essential elements of analysis (EEA).

2. TEST MISSION: To evaluate method of employment for STANO equipment.

3. TEST OBJECTIVES:

a. Objective 1: To determine the impact of using STANO equipment on a unit's combat intelligence capability. Subobjectives and EEA are contained in Appendix 1.

b. Objective 2: To determine the impact on selected aspects of firepower resulting from the use of STANO equipment. Subobjectives an EEA are contained in Appendix 2.

c. Objective 3: To determine the impact on mobility resulting from the use of STANO equipment. Subobjectives and EEA are contained in Appendix 3.

d. Objective 4: To determine the impact on command, control and communications resulting from the employment of STANO equipment. Subobjectives and EEA are contained in Appendix 4.

e. Objective 5: To determine the impact of reliability and maintenance factors of STANO equipment on the unit's ability to perform its mission. Subobjectives and EEA are contained in Appendix 5.

5. OBJECTIVE LOGIC DIAGRAM:

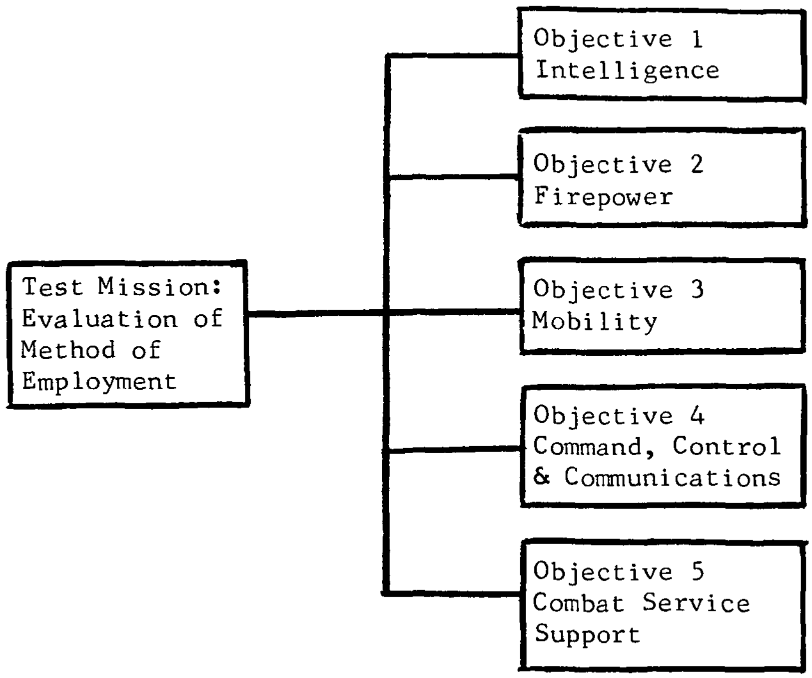


Figure D-1. Objective Logic Diagram

6. FORMAT: The format of this plan divides the overall STANO II objective into five (5) working objectives. The working objectives are sub-divided into subobjectives which are further sub-divided into EEA. The EEA are answered by data requirements and these are answered by questions. The objectives, subobjectives, EEA, data requirements and questions are numbered decimally by level of division. The numbering system facilitates identification of these elements. For example, the subobjectives pertaining to objective 1 are numbered 1.1,1.2,1.3, etc. The EEA pertaining to subobjective 1.1 are numbered 1.1.1., 1.1.2, 1.1.3, etc. The data requirements pertaining to EEA 1.1.1 are numbered 1.1.1.1, 1.1.1.2, 1.1.1.3, etc. The questions pertaining to data requirement 1.1.1.1 are numbered 1.1.1.1.1, 1.1.1.1.2, 1.1.1.1.3, etc.

7. ADDITIONAL REQUIREMENTS: Appendix 6 contains additional data collection requirements.

Appendices
1--Objective 1
2--Objective 2
3--Objective 3
4--Objective 4
5--Objective 5
6--General Requirements

DISTRIBUTION: Same as basic plan

OBJECTIVE 1

1. PURPOSE: This appendix outlines the subobjectives and EEA pertaining to test objective 1.

2. OBJECTIVE 1: To determine the impact of using STANO equipment on a unit's combat intelligence capability.

RATIONALE: The function of intelligence may be influenced by the use of STANO equipment. If the devices employed provide useful intelligence information with reasonable trade offs of cost, effort, maintainability and control factors then some or all of the concepts for its employment are sound.

3. SUPPORTING INFORMATION:

SUBOBJECTIVE 1.1 To evaluate the impact on a unit's surveillance capability from the use of STANO equipment.

SUBOBJECTIVE 1.2 To evaluate the impact on a unit's target acquisition capability from the use of STANO equipment.

SUBOBJECTIVE 1.3 To determine the effect of interactions of STANO equipment with itself and with other standard intelligence gathering equipment.

SUBOBJECTIVE 1.4 To provide an evaluation of human factors engineering requirements for the operation and maintenance of STANO equipment and the training of personnel.

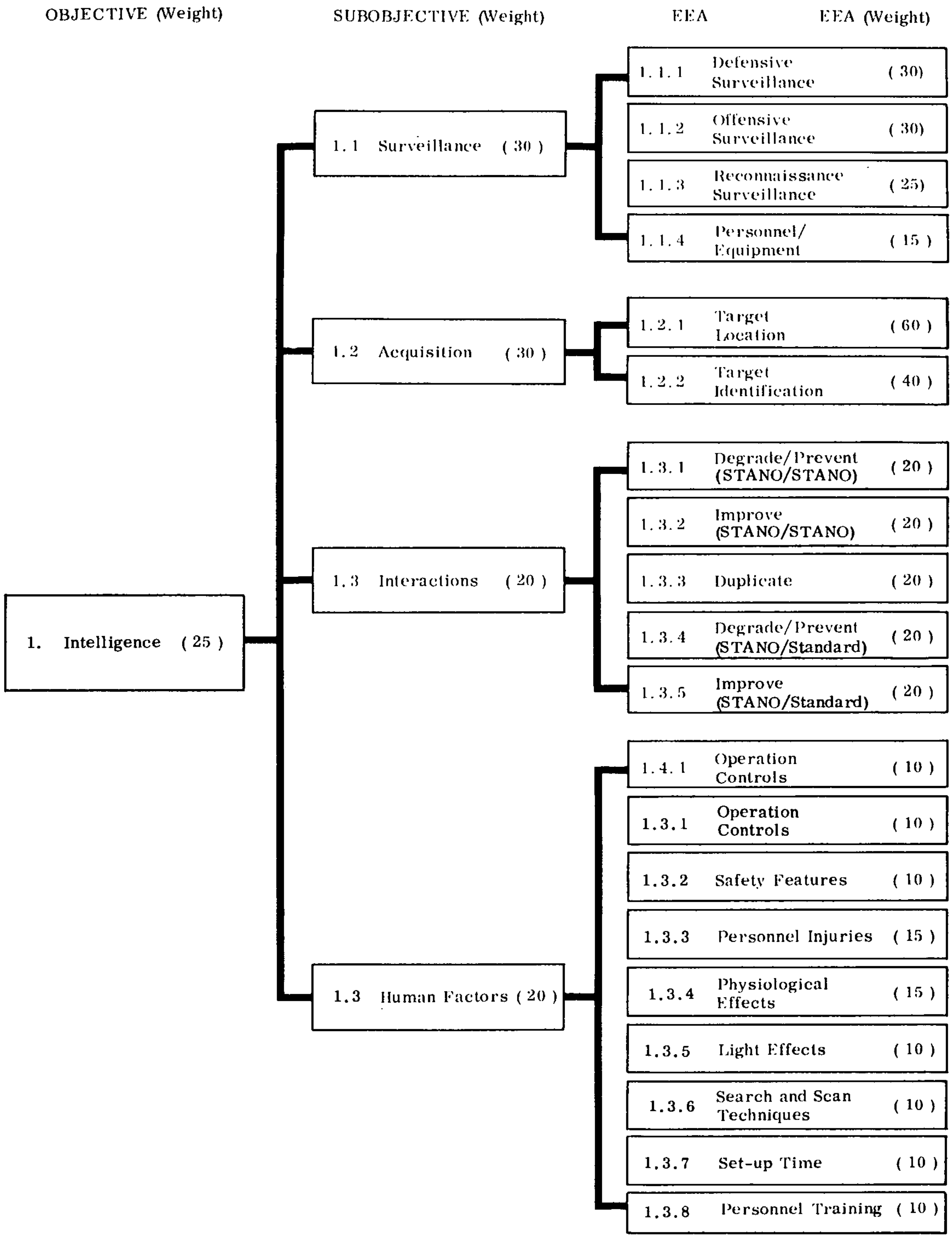


Figure D-2. Logic Diagram - Objective 1

SUBOBJECTIVE 1.1 To evaluate the impact on a unit's surveillance capability from the use of STANO equipment.

RATIONALE: It is expected that a unit's surveillance capability will be influenced by use of STANO equipment. The problem is to determine how much this capability has been changed and at what cost to the rest of the unit in terms of resources devoted to operation of the equipment. For the purposes of the Field Test, combat surveillance is defined as the principal means through which enemy objects and activities are detected.

SUPPORTING INFORMATION:

EEA 1.1.1 What improvement in battlefield surveillance was gained by each test unit in defensive situations through the use of STANO equipment?

EEA 1.1.2 What improvement in battlefield surveillance was gained by each test unit in offensive situations through the use of STANO equipment?

EEA 1.1.3 What improvement in battlefield surveillance was gained by each reconnaissance test unit through the use of STANO equipment?

EEA 1.1.4 Were the personnel and equipment allocations adequate for the operation of STANO equipment?

EEA 1.1.1 What improvement in battlefield surveillance was gained by each test unit in defensive situations through the use of STANO equipment?

RATIONALE: Defensive operations are actions to prevent, resist, repulse, or destroy enemy attack. It is expected that the use of STANO equipment will increase a unit's capability to insure early warning and provide reliable information of approaching enemy forces thereby greatly assisting the overall defensive plans by avoiding tactical surprise.

DATA REQUIREMENTS:

1.1.1.1 What percent of the activities presented for detection were reported?

AGGRESSOR QUESTIONS

1.1.1.1.1 How many activities were available for detection?

1.1.1.1.1.1 What was each activity?

1.1.1.1.1.2 What were the total targets in each activity?

1.1.1.1.1.3 How many personnel were in each activity?

NOTE: The number will be stated precisely in the operators report. It will not be given as "squad" for example. (Training Plan)

1.1.1.1.1.4 How many vehicles were in each activity?

NOTE: Aggressor Collectors are assigned from among the aggressor forces. They also collect answers to aggressor questions. The scenario will specify that at least one vehicle on an average will be presented as a target for every 50 men.

FRIENDLY QUESTIONS

1.1.1.1.2 How many activities were detected?

1.1.1.1.2.1 What was each activity that was detected?

1.1.1.1.2.2 What were the detected targets within each activity?

1.1.1.1.2.3 How many personnel were reported in each activity?

1.1.1.1.2.4 How many vehicles were reported in each activity?

1.1.1.1.3 Was the target under continual surveillance during the entire period of activity? If not, why?

1.1.1.2 What percentage of the activities presented were incorrectly reported in the initial report?

AGGRESSOR QUESTIONS

1.1.1.2.1 At what time did each activity begin?

1.1.1.2.2 What are map coordinates of each aggressor activity?

1.1.1.2.3 Where was aggressor located in reference to each item of STANO equipment? (Analysis Question)

1.1.1.2.4 At what time did activity terminate?

NOTE: For Control and Scenario: Map overlays should be designated so that aggressors know which routes to follow, at what time they are to arrive at a check point and it shouldbe determined prior to the test when and where they are detectable from friendly positions. Map overlays should also be prepared for friendly controllers so they can control movement and taking up of positions at the proper times when aggressors are detectable.

FRIENDLY QUESTIONS

1.1.1.2.5 What time was each activity reported?

1.1.1.2.6 What was reported range to each aggressor target?

1.1.1.2.7 What are reported map coordinates of each aggressor target?

1.1.1.2.8 Where was activity in relation to landmarks?

1.1.1.2.9 What was the reported time each activity terminated?

1.1.1.2.10 What percentage of all target reports were proven to be false alarms?

1.1.1.2.10.1 How many reports were submitted? (use answer to 1.1.1.1.2)

1.1.1.2.10.2 How many were false alarms?

NOTE: False alarms are caused by one of the following:

1. No activity at location.

2. No activity at that time.

3. Map coordinates estimate and true location are too far off.

4. Equipment could not have detected due to range or line-of-sight limitations, etc.

NOTE ANALYSIS: Incorrect detection is answered by aggressor 1.1.1.1.1.1 - 1.1.1.2.1 - 1.1.1.2.2 and friendly 1.1.1.1.2.1--1.1.1.2.5 and 1.1.1.2.6 and from the air, 1.1.1.4.3 through 1.1.1.4.1.2. There should be three products of the analysis--error in type, error in time and error in location. Maximum allowable error in type, time and location will be determined in the field, prior to the test based on the terrain and scenario combination.

1.1.1.3 What was average time of each target exposure before target was reported by STANO equipment operator?

AGGRESSOR QUESTIONS

1.1.1.3.1 At what time did each activity begin? (Use answer to 1.1.1.2.1)

1.1.1.3.2 At what time did each activity terminate? (Use answer to 1.1.1.2.4)

FRIENDLY QUESTIONS

1.1.1.3.3 At what time was each activity reported? (Use answer to 1.1.1.2.5)

1.1.1.3.4 What was the reported time each activity terminated? (Use answer to 1.1.1.2.10)

1.1.1.4 What was the average range of detection by each item of STANO equipment?

AGGRESSOR QUESTIONS

1.1.1.4.1 What were the coordinates of each aggressor target at time of detection?

FRIENDLY QUESTIONS

1.1.1.4.2 What were the map coordinates and nomenclature of the detecting item of STANO equipment at time of detection?

NOTE ANALYSIS: What was range of detection in meters of each target from 1.1.1.4.1 and 1.1.1.4.2?

1.1.1.4.3 What was error in meters between STANO operator estimate (1.1.1.2.6) and true range?

NOTE: Any error less than the fragmentation range of a 105 Howitzer HE round will be counted as zero.

NOTE: The following questions are pertinent only to STANO equipment on aircraft.

1.1.1.4.4 What was the slant range to the target?

1.1.1.4.5 What was the altitude of the aircraft?

1.1.1.4.6 What was the air speed of the aircraft?

1.1.1.4.7 Over what geographical map coordinates was the aircraft located when the target was detected?

1.1.1.4.8 Was the mission to confirm a suspected target?

1.1.1.4.9 What time was the detected target reported by the aerial means?

1.1.1.4.10 Time target identified?

1.1.1.4.11 What position in the aerial platform (pilot, co-pilot, or observer) reported the target?

1.1.1.4.12 What was the sky condition (cloud coverage)?

1.1.1.4.13 What was the height of the base of clouds?

1.1.1.5 What percentage of detected activities were found through the use of STANO equipment?

1.1.1.5.1 How many activities were detected? (Answer to 1.1.1.1.2)

1.1.1.5.2 How many activities were detected by use of STANO equipment?

1.1.1.5.3 Was the same target under surveillance by more than one type of STANO equipment at the same time?

1.1.1.5.3.1 If so, did one piece of equipment provide better coverage or detection than the other? (J)

1.1.1.5.4 By what means, otherthan through the use of STANO equipment, were activities detected?

EEA 1.1.2 What improvement in battlefield surveillance was gained by each test unit in offensive situations through the use of STANO equipment?

RATIONALE: A unit is organized for combat to make the best use of the capabilities of all its elements to accomplish offensive missions. It is expected that STANO equipment will improve a unit's capability to avoid unexpected interference by the enemy, to assist in maintaining integrity of the formations, provide reliable information prior and during the attack, and assist in the security of flanks and gaps. The EEA is directed toward measuring this expected improvement.

1.1.2.1 What percent of the activities presented for detection during the offensive action were reported?

AGGRESSOR QUESTIONS

1.1.2.1.1 How many activities were available for detection?

1.1.2.1.1.1 What was each activity that was presented?

1.1.2.1.1.2 What were the total targets in each activity?

1.1.2.1.1.3 How many personnel were in the group?

1.1.2.1.1.4 How many vehicles were in the group?

FRIENDLY QUESTIONS

1.1.2.1.2 How many activities were detected?

1.1.2.1.2.1 What was each activity that was reported?

1.1.2.1.2.2 What were the reported total targets in each activity?

1.1.2.1.2.3 How many personnel were reported in the group?

1.1.2.1.2.4 How many vehicles were reported in the group?

1.1.2.1.3 Was target under continual surveillance during the entire period of activity? If not, why?

ANALYSIS NOTE: All of the targets that existed at the time of the offensive and all of these targets that had been detected will be considered in answering this question.

1.1.2.2 What percentage of the activities presented were incorrectly reported in the initial target report?

AGGRESSOR QUESTIONS

1.1.2.2.1 At what time did each activity begin?

1.1.2.2.2 What are map coordinates of each aggressor activity?

1.1.2.2.3 At what time did aggressor activity terminate?

FRIENDLY QUESTIONS

1.1.2.2.4 What time was each activity reported?

1.1.2.2.5 What are reported map coordinates of each aggressor target?

1.1.2.2.6 Where was aggressor located in reference to STANO equipment?

1.1.2.2.7 Where was activity in relation to landmarks?

1.1.2.2.8 What was the reported time each activity terminated?

ANALYSIS QUESTIONS

1.1.2.2.9 Where was aggressor located in reference to each item of STANO equipment?

1.1.2.3 What percentage of all target reports were proven to be false alarms?

1.1.2.3.1 How many reports were submitted?

1.1.2.3.2 How many reports were false alarms?

1.1.2.4 During the offense, what was the average time of each target exposure before target was reported by STANO equipment operator?

AGGRESSOR QUESTIONS

1.1.2.4.1 At what time did each activity begin?

1.1.2.4.2 What was the time each activity terminated?

1.1.2.5 What percentage of target detection reports resulted from the use of STANO equipment? (by type of STANO equipment)

1.1.2.5.1 Use answer to 1.1.2.1.1

1.1.2.5.2 How many target detection reports resulted from the use of STANO equipment? (by item of STANO equipment)

1.1.2.6 What improved capability did the use of STANO equipment provide the attacking unit avoiding enemy detection equipment and personnel?

1.1.2.6.1 Did the use of STANO equipment (report by device) provide improvement for the attacking unit in avoiding enemy detection equipment?

1.1.2.6.1.1 How many simulated mines were stepped on by individuals of the attacking unit?

1.1.2.6.1.2 How many trip flares were stepped on by individuals of the attacking unit?

1.1.2.6.1.3 How many wires were stepped on by individuals of the attacking unit?

1.1.2.6.1.4 How many times did aggressor listening posts correctly detect attacking unit?

NOTE: Aggressor Question

1.1.2.6.2 At what time was attacking unit detected by listening posts?

NOTE: Aggressor Question

1.1.2.6.3 How much time did enemy have to vacate area upon learning of attack?

NOTE: To aggressor and scenario - Insure that trip wires, etc., mentioned above are in fact set up in path of friendly forces.

1.1.2.7 In how many cases did friendly and enemy forces pass each other with/without detection?

NOTE: All questions for this data requirement are analysis questions.

1.1.2.7.1 In how many cases did a friendly force pass a close enemy force without being detected?

1.1.2.7.2 In how many cases was a friendly force which passed a close enemy force detected?

1.1.2.7.3 In how many cases did a friendly force detect an enemy force and infiltrate that area without detection by that enemy force?

1.1.2.7.4 Were they able to exfiltrate the area without being detected?

1.1.2.7.5 In how many cases did an enemy force pass a close friendly force without being detected?

1.1.2.7.6 In how many cases was an enemy force which passed a close friendly force detected?

1.1.2.7.7 In how many cases did an aggressor force detect a friendly force area and infiltrate that area without detection by that friendly force?

1.1.2.7.8 Were they able to exfiltrate the area without being detected?

ANALYSIS QUESTION

1.1.2.7.9 How many times did friendly and enemy forces pass each other without either force detecting the other?

1.1.2.8 Based on the debriefing what were the test unit commander's specific comments as to the role STANO equipment played in successfully reaching the designated objective area?

EEA 1.1.3 What improvement in battlefield surveillance was gained by each reconnaissance test unit through the use of STANO equipment?

RATIONALE: Reconnaissance is a mission undertaken to obtain, through observation, information about the activities and resources of an enemy or potential enemy; and data concerning weather, terrain, and other environmental factors. STANO equipment is expected to provide more reliable and timely information to assist this type mission responsibility.

DATA REQUIREMENTS:

1.1.3.1 What percentage of the activities presented for detection during the conduct of the reconnaissance mission were reported?

1.1.3.1.1 How many activities were presented for detection during the conduct of the mission by type target?

NOTE: Aggressor Question

1.1.3.1.2 How many activities were detected by each item of STANO equipment?

1.1.3.1.3 How many different types of targets were detected by each item of STANO equipment?

1.1.3.2 What percentage of the activities presented for detection during the conduct of the reconnaissance mission were incorrectly reported?

1.1.3.2.1 Use answer to 1.1.3.1.1

1.1.3.2.2 How many activities were incorrectly reported?

1.1.3.3 In how many cases did friendly reconnaissance patrols and enemy forces pass each other with/without detection?

NOTE: All questions for this data requirement are analysis questions.

1.1.3.3.1 Use answer to 1.1.2.7.1

1.1.3.3.2 Use answer to 1.1.2.7.2

1.1.3.3.3 Use answer to 1.1.2.7.3

1.1.3.3.4 Use answer to 1.1.2.7.4

1.1.3.3.5 Use answer to 1.1.2.7.5

1.1.3.3.6 Use answer to 1.1.2.7.6

1.1.3.3.7 Use answer to 1.1.2.7.7

1.1.3.3.8 Use answer to 1.1.2.7.8

ANALYSIS QUESTION

1.1.3.3.9 Use answer to 1.1.2.7.9

1.1.3.4 Was the unit detected by the enemy while relying on STANO equipment? If so, how many times?

1.1.3.4.1 How many times was STANO aerial equipment used to allow a friendly patrol to avoid detection by the enemy?

1.1.3.4.2 Was aerial or ground STANO equipment of more value to the unit in avoiding detection by the enemy?

EEA 1.1.4 Were the personnel and equipment allocation adequate for the operation of STANO surveillance equipment?

RATIONALE: Planning factors must be developed which can be utilized in properly allocating resources. Examples of this would be: number of operator personnel, dual functions by operator personnel, maintenance, and transportation.

DATA REQUIREMENTS:

1.1.4.1 Were the assigned number of individuals adequate to operate each item of STANO equipment, continuously, during darkness throughout a given night?

1.1.4.1.1 How many personnel were allocated to operate each piece of STANO equipment?

1.1.4.1.2 Was this number adequate for efficient operation?

1.1.4.1.3 How long (hours and minutes) was equipment used without personnel change?

1.1.4.1.4 How much time was lost due to operator change?

1.1.4.1.5 What was land area responsibility in square meters for each operator by type of equipment?

1.1.4.2 Can the STANO surveillance equipment operator adequately perform his normal functions?

1.1.4.2.1 What is the duty MOS of operator of each item of STANO equipment?

1.1.4.2.2 What are the primary MOS of each operator of each item of STANO equipment?

1.1.4.2.3 Did the individually operated items of STANO equipment facilitate or complicate the man's normal intelligence gathering ability? (J)

1.1.4.2.4 Did reduction of night vision hinder the accomplishment of other normal duty functions? (J)

1.1.4.2.5 Was the time factor in operating the STANO (by type) a hindering factor in the accomplishment of operators normal duty functions?

1.1.4.3 Were the assigned number of individuals able to transport each item of man-portable STANO surveillance equipment?

1.1.4.3.1 How many men were needed to transport STANO equipment, by item of equipment, when more than one man was required?

1.1.4.3.2 What was distance, in meters, equipment was carried?

1.1.4.3.3 Were operators and assistants able to carry crew-served equipment? If not, how many additional personnel were needed?

1.1.4.3.4 Did personnel carrying equipment have to be changed during extended moves?

1.1.4.3.5 Was terrain and vegetation in the test area a problem during the transport of equipment? (J)

1.1.4.3.6 What was the average time required to move an item of equipment 100 meters during night?

1.1.4.3.7 What was the average time required to set up each item of equipment during the night?

1.1.4.4 Were changes made in personnel, equipment, and/or organization to facilitate the operation of STANO equipment used in surveillance roles? If so, describe.

1.1.4.4.1 What changes were made in personnel to facilitate the operation of STANO equipment?

1.1.4.3.2 Were any changes made in STANO equipment?

1.1.4.4.3 Were any changes made in organization to facilitate the operation of the STANO equipment?

SUBOBJECTIVE 1.2: To determine the impact on a unit's target acqusition capability from the use of STANO equipment.

RATIONALE: It is expected that the employment of STANO equipment will increase a unit's capability to secure information, verify, identify, accurately locate, or disprove the presence of suspected enemy targets. This subobjective is directed toward obtaining information to evaluate the improvement of target acquisition. For the purposes of the test target acquisition begins after a target or activity has been detected through any means.

SUPPORTING INFORMATION:

EEA 1.2.1 How accurate was target location?

EEA 1.2.2 How accurate was target identification?

EEA 1.2.1 How accurate was target location?

RATIONALE: Target location consists of determining the position of the target with respect to known points or to a common grid. Some items of STANO equipment have a range and azimuth capability that should allow the determination of accurate location.

DATA REQUIREMENTS:

1.2.1.1 For those items of equipment which have a range capability, what were the range inaccuracies for targets acquired by each piece of STANO equipment?

AGGRESSOR QUESTIONS

1.2.1.1.1 What were map coordinates of each target?

FRIENDLY QUESTIONS

1.2.1.1.2 What were map coordinates of each piece of STANO equipment?

1.2.1.1.3 What were reported map coordinates for each acquired aggressor target?

1.2.1.1.4 For each piece of STANO equipment, what was the estimated range, in meters, to each target?

ANALYSIS QUESTIONS

1.2.1.1.5 For each piece of STANO equipment, what was the actual range in meters?

1.2.1.1.6 For each of the above acquisitions, was the range, in meters, less than the actual distance?

1.2.1.1.7 For each of the above acquisitions, was the range, in meters, greater than the actual distance?

1.2.1.2 For those items of equipment which have an azimuth capability, what were the azimuth inaccuracies for potential targets acquired by each piece of STANO equipment?

FRIENDLY QUESTIONS

1.2.1.1.1 What was the azimuth of aggressor target reported by STANO equipment operators?

ANALYSIS QUESTIONS

1.2.1.2.2 What was the azimuth from each piece of STANO equipment to each potential target acquired?

NOTE CONTROLLER: True azimuth from each piece of stationary STANO equipment to each potential target must be daylight surveyed.

1.2.1.2.3 What was the difference between STANO operator reported azimuth of aggressor target and true azimuth of aggressor target?

1.2.1.3 For STANO equipment items which do not have range or azimuth capability, what was the error in meters in estimating range and azimuth?

1.2.1.3.1 How was range estimated for equipment that does not have range capacity? (J)

1.2.1.3.2 What was the distribution of range inaccuracies?

ANALYSIS: Use true range from ground survey and reported range from operator.

1.2.1.3.3 What was the distribution of azimuth inaccuracies?

ANALYSIS: Use true azimuth from ground survey and reported azimuth from operator.

1.2.1.3.4 Was the target location information sufficiently accurate to place effective 105mm howitzer fire on the target? (J)

1.2.1.4 What percentage of the targets were detected and located using the same item of STANO equipment?

1.2.1.4.1 Did the item of STANO equipment that detected the target also determine range and azimuth?

1.2.1.4.2 What item of STANO equipment was used to assist in aggressor target location?

EEA 1.2.2 How accurate was target identification?

RATIONALE: Target identification is the determination of the nature, composition, and size of the target. It is expected that STANO equipment will improve a unit's capability to accurately and completely accomplish this determination.

DATA REQUIREMENTS:

1.2.2.1 What percentage of available personnel targets were correctly identified by each item of STANO equipment?

1.2.2.1.1 How many personnel target groupings were presented for identification?

NOTE: Data collector must count control and data collection personnel as well as aggressor personnel, unless data collectors are not exposed to detection.

1.2.2.1.1.1 How many personnel targets presented were single men?

1.2.2.1.1.2 How many personnel targets presented were groups of men (squad size)?

1.2.2.1.1.3 How many personnel targets presented were larger than squad? Give number of men.

1.2.2.1.1.4 How many presented targets were static?

1.2.2.1.1.5 How many presented targets were walking or running erect?

f 1.2.2.1.1.6 How many presented targets were crawling?

1.2.2.1.1.7 How many personnel targets presented were armed?

1.2.2.1.1.8 How long (minutes) was each personnel target exposed (available for identification)?

1.2.2.1.1.9 Does color of combat dress make personnel targets more difficult to detect or identify? (for aggressor and friendly)

1.2.2.1.1.10 What direction was target moving?

1.2.2.1.2 How many personnel targets were within the range and line-of-sight capability of each piece of STANO equipment?

AGGRESSOR FORCE DATA:

1.2.2.1.2.1 What are map coordinates of each presented personnel target as per 1.2.2.1.1.1 through 1.2.2.1.1.9 (Nature of personnel targets)?

FRIENDLY FORCE:

1.2.2.1.2.2 What are sight range limitations (in meters) for each emplaced item of STANO equipment?

1.2.2.1.2.3 What are map coordinates of each friendly piece of STANO equipment?

1.2.2.1.2.4 What are map coordinates of aggressor targets reported by each STANO operator?

NOTE: (1.2.2.1.2.2) Range in meters must be known for each 10° of viewed terrain in the exercise area.

1.2.3.1.3 Which personnel targets were not in line-of-sight with which items of STANO equipment?

1.2.2.1.4 Which items of STANO equipment identified target?

1.2.2.1.5 (Use answer to 1.2.1.2.4)

1.2.2.1.6 What is nature of aggressor personnel target as reported by STANO equipment operator?

1.2.2.1.7 In what piece of STANO equipment was the resolution not sufficiently high to identify the nature and armament of the personnel targets? (J)

1.2.2.1.8 Could STANO equipment penetrate "A blind" or "camouflage" to detect and identify personnel targets? (J)

1.2.2.1.9 Was detection or identification by heat emission? (Question applies only to ground equipment items)

1.2.2.1.10 Was target on well defined avenue of approach? (J)

1.2.2.1.11 What was target doing?

1.2.2.1.12 What was the personnel targets field of fire? (Question applies to ground equipment items)

1.2.2.1.13 Could direction of moving personnel targets be determined?

1.2.2.1.14 Could aggressor strength be estimated?

1.2.2.1.15 Could rate of movement be estimated?

1.2.2.1.16 What percent of detected personnel targets were correctly identified as to size?

1.2.2.1.17 What percent of detected personnel targets were overestimated in size?

1.2.2.1.18 What percent of detected personnel targets were underestimated in size?

1.2.2.1.19 What was the nature of the targets incorrectly identified as personnel targets? (Analysis Question) "On the spot" investigation of reported map coordinates may be necessary for identification of object that spoofed equipment or operator. Error in coordinates and range must be investigated to determine operator or equipment fault or capability limits.

1.2.2.2 What percentage of available crew-served weapons targets were correctly identified by each item of STANO equipment?

1.2.2.2.1 How many crew-served weapon targets were presented?

AGGRESSOR

1.2.2.2.1.1 How many presented targets were crew-served M60 machine gun?

1.2.2.2.1.2 How many presented targets were 50 caliber machine gun?

1.2.2.2.1.3 How many presented targets were Mortar Teams?

1.2.2.2.1.4 How many presented targets were Recoilless Rifle Teams?

1.2.2.2.1.5 Which crew-served weapons were moved during a single night operation?

1.2.2.2.1.6 How long (minutes) was each target in position (available for identification)?

NOTE: Degree of camouflage, i.e., bunkers, blinds, foilage concealment, etc., must be considered by controllers and collectors.

1.2.2.2.2 How many crew-served weapon targers were presented within the range and line-of-sight capability of each item of STANO equipment?

1.2.2.2.2.1 What are map coordinates of each presented crew-served weapon target? (Aggressor Question)

1.2.2.2.2.2 Which crew-served weapon targets did not have line-of-sight with each item of STANO equipment? (Analysis Question)

1.2.2.2.2.3 (Use answer to 1.2.2.1.2.2) (Site range limitations)

1.2.2.2.2.4 (Use answer to 1.2.2.1.2.3) (STANO map coordinates)

1.2.2.2.2.5 What are map coordinates reported by each STANO equipment operator for each identified crew-served target?

1.2.2.2.2.6 What is nature of target as reported by STANO equipment operator?

1.2.2.2.3 Could detected crew-served targets be correctly identified as to size?

1.2.2.2.4 What crew-served weapon targets were over-estimated in size?

1.2.2.2.5 What percent of detected crew-served weapon targets were under-estimated in size?

1.2.2.2.6 Were crew-served weapon targets more accurately identified the personnel targets?

1.2.2.2.7 What was the nature of the targets incorrectly identified as crew-served weapon targets by type of target? "On the spot" investigation of reported map coordinates may be necessary for possible identification of object that spoofed equipment or operator.

1.2.2.3 Could the following information be obtained through the use of each item of STANO equipment?

(Debriefing Form Questions)

1.2.2.3.1 Could STANO equipment determine unit size? (J)

1.2.2.3.2 Could STANO equipment determine type of unit? (J)

1.2.2.3.3 Could STANO equipment determine fields of fire? (J)

1.2.2.3.4 Could STANO equipment determine maneuver space? (J)

1.2.2.3.5 Could STANO equipment determine location? (J)

1.2.2.3.6 Could STANO equipment determine cover and concealment? (J)

1.2.2.3.7 Could STANO equipment determine speed of movement? (J)

1.2.2.3.8 Could STANO equipment determine avenues of approach? (J)

1.2.2.3.9 Could STANO equipment determine disposition and density? (J)

1.2.2.3.10 Could STANO equipment determine terrain features? (J)

1.2.2.3.11 Could STANO equipment determine type of weapons? (J)

1.2.2.3.12 Could STANO equipment determine negative information where enemy was not going and where enemy would not be at a given time? (J)

1.2.2.3.13 Was STANO equipment operator's intelligence report timely? (J)

NOTE ANALYSIS: The answers to these questions should be obtained from the Commander's Debriefing forms.

SUBOBJECTIVE 1.3 To determine the effect of interaction of STANO equipment with itself and with other standard intelligence gathering equipment.

RATIONALE: Certain STANO equipment may interfere with, degrade the performance of, or prevent the use of other items. This may result from over-illumination, from electronic interference, or from other causes. Some items of STANO equipment may augment or improve the performance of another item, when they are used in the same equipment mix. Some STANO items are directly in competition in regard to the type and quality of information they produce. Data must be obtained to identify equipment interactions in order to maximize effectiveness of equipment mixes.

SUPPORTING INFORMATION:

EEA 1.3.1 Does any item of STANO equipment in the equipment mixes tested interfere with, degrade the performance of, or prevent the use of any other STANO item relative to intelligence?

EEA 1.3.2 Does any combination of STANO equipment tested in the different equipment mixes significantly improve the performance of another item of STANO equipment relative to intelligence?

EEA 1.3.3 Do two or more items perform essentially the same functions and produce the same type and quality of information relative to intelligence?

EEA 1.3.4 Do items of STANO equipment under test interfere with, degrade the performance of, or prevent the use of any standard item, and conversely, does any standard item interfere with, degrade the performance of, or prevent the use of, any item of STANO equipment tested for surveillance and target acquisition?

EEA 1.3.5 Does employment of any STANO equipment significantly improve the performance of a standard item of equipment, and conversely, does any standard item significantly improve the performance of a STANO item used for surveillance and target acquisition?

EEA 1.3.1 Does any item of STANO equipment in the equipment mixes tested interfere with, degrade the performance of, or prevent the use of any other STANO item relative to intelligence?

RATIONALE: It is probable, due to the complexity and sensitivity of items employed for STANO, the one item may interfere with, degrade or prevent the use of other STANO items. This may be due to over-illumination, electronic interference, or other reasons. Tests should be designed to identify all equipment combinations which are not compatible.

DATA REQUIREMENTS:

1.3.1.1 What items of STANO equipment degrade the performance of any other items of STANO equipment?

1.3.1.1.1 What item of equipment was degraded?

1.3.1.1.2 What was the duration of the interference?

1.3.1.1.3 What was the causes of the interference? (J)

1.3.1.1.4 What was the extent of the interference? (J)

1.3.1.1.5 Were any measures or field expedients developed to overcome any such adverse interference? (J)

1.3.1.2 What items of STANO equipment prevented the use of any other items of STANO equipment?

1.3.1.2.1 What item of equipment could not be used?

1.3.1.2.2 What was the duration that this item could not be used?

NOTE: Indicate on the matrix shown below the items of STANO equipment which interfere by degrading or preventing the use of any other STANO items relative to intelligence. Use D for degradation and P for preventing the use. If interference is temporary, indicate its duration in minutes after P or D. If such factors as distance between items or levels of light intensity are the controlling factors indicate in the remarks section. Indicate in the remarks section measures or field expedients developed to overcome adverse interference.

Cause of Interference	Affected by Interference																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-3

EEA 1.3.2 Does any combination of STANO equipment tested in the different equipment mixes significantly improve the performance of another item of STANO equipment relative to intelligence?

RATIONALE: It is probable that certain items of equipment, used in combination, will improve the performance of one or more items of equipment. This may consist of extensions of its effective range of operation, its accuracy in target acquisition and identification, reduction in false alarms, or other similar performance improvement. This EEA is designed to identify all combinations of STANO equipment items which complement item performance.

DATA REQUIREMENTS:

1.3.2.1 Did any combinations of STANO equipment result in improved performance for one of the items?

1.3.2.1.1 What item of equipment resulted in improved performance?

1.3.2.1.2 What was the duration (in minutes) of this improvement?

1.3.2.1.3 What was the extent of this improvement? (Give specific details)? (J)

NOTE: Indicate in the matrix shown below the items of STANO equipment which improved the performance of other STANO items relative to intelligence. If duration is temporary, indicate it, duration in minutes using the letter T, e.g; T 15. Enter R for improvement in range followed by the numerical increase in meters, e.g., R 100. Enter C for clarity of image or transmission. Enter any other improvement discovered by using the remarks section.

Cause of Improvement	Affected by Improvement																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-4

EEA 1.3.3 Do two or more items perform essentially the same functions and produce the same type and quality of information relative to intelligence?

RATIONALE: It is probable that within the STANO family of equipment there are items that have duplicate capabilities and produce essentially the same information, although the engineering design principles for each may be entirely different. This is desirable during the developmental and test stage, but the field tests should identify any such duplication and produce information on the relative merits of each item in such areas as reliability, maintenance, ease of operation, and other similar factors that can serve as a basis for decisions on which item should be selected for standardization and procurement.

DATA REQUIREMENTS:

1.3.3.1 Were there any STANO items which produced duplicate information relative to intelligence?

1.3.3.1.1 Whenever two items or more perform the same function which one was more reliable? (J)

1.3.3.1.2 Whenever two items or more perform the same function which one was easier to maintain? (J)

1.3.3.1.3 Whenever two items or more perform the same function which one was easier to maintain? (J)

1.3.3.1.4 Did the item have other characteristics such as weight, transportability, etc., which made it more desirable? Provide specific details and when possible quantify the information. (J)

NOTE: This data requirement can and should be derived from an objective data form matrix.

NOTE: Indicate on the matrix shown below the items of STANO equipment which duplicate the performance of other STANO items relative to intelligence. Enter S for items which perform same or a very similar function, in the square corresponding to the two items. Explain in the remark paragraph the item recommended for retention and the reasons in such areas as reliability, light-weight, ease of operation and maintenance. If possible, quantify the information.

Cause of Duplication	Affected by Duplication																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-5

EEA 1.3.4 Do items of STANO equipment under test interfere with, degrade the performance of, or prevent the use of any standard item, and conversely does any standard item interfere with, degrade the performance of, or prevent the use of, any item of STANO equipment tested for surveillance and target acquisition?

RATIONALE: It is possible, due to the complexity and sensitivity of items employed for STANO, that one item may interfere with, degrade, or prevent the use of standard items. Conversely, standard items of equipment may prevent, degrade or enhance the use of STANO equipment. This may be due to electronic interference, overloading, or other reasons. Tests should be designed to identify all equipment combinations which are not compatible.

DATA REQUIREMENTS:

1.3.4.1 Did any item of STANO equipment interfere with, degrade the performance of, or prevent the use of any standard item of equipment? If so, identify the items(s) and describe the cause and extent of interference.

1.3.4.1.1 Were any measures or field expedients developed to overcome any such adverse interference?

1.3.4.1.2 Was the interference of a temporary nature?

1.3.4.2 Did any item of standard equipment interfere with, degrade the performance of or prevent the use of any STANO item of equipment? If so, identify the item(s) and describe the cause and extent of interference.

1.3.4.2.1 Describe any measures or field expedients developed to overcome any such adverse interference?

1.3.4.2.2 What was the duration of the interference?

NOTE: It may be possible to collect information for answering all the above questions on one data form using the matrix shown below. Use D for degradation and P for preventing the use. If interference is temporary, indicate its duration in minutes after P or D. If such factors as distance between items or levels of light intensity are the controlling factors indicate in the remarks section. Indicate in the remarks section measures or field expedients developed to overcome adverse interference.

Affected by Interference / Cause of Interference	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-6

EEA 1.3.5 Does employment of any STANO equipment significantly improve the performance of a standard item of equipment and conversely, does any standard item significantly improve the performance of a STANO item used for surveillance and target acquisition?

RATIONALE: It is possible that certain STANO items of equipment used in combination, will improve the performance of one or more standard items of equipment. Conversely, standard items of equipment may significantly improve the performance of a STANO item. This may consist of extension of effective range of operation, improvement of accuracy, reduction in false alarms, or other similar performance improvement. Tests should be designed to identify all equipment combinations which are compatible.

DATA REQUIREMENTS:

1.3.5.1 Did any combination of STANO equipment result in improved performance of any standard item? Give specific details on each such combination and the type and extent of improvement achieved. State the conditions such as distance between items, levels of ambient light, etc., which control the enhancement.

1.3.5.1.1 Were any measures or field expedients developed to continue the improved condition?

1.3.5.1.2 Was the improvement of a temporary nature?

1.3.5.2 Did any item of standard equipment improve the performance of any item of equipment? If so, identify the items and describe the improvement.

1.3.5.2.1 Describe any measures or field expedients developed to continue the improved condition.

1.3.5.2.2 What was the duration of the improvement?

NOTE: It may be possible to collect information for answering all the above questions on one data form using the matrix shown below. If duration is temporary indicate the duration in minutes using the letter T, e.g.; T 15. Enter R for improvement in range followed by the numerical increase in meters, e.g.; R 100. Enter C for clarity of image or transmission. Enter any other improvement discovered by using the remarks section.

Affected by Improvement / Cause of Improvement	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY&NBP																		

Remarks:

Figure D-7

SUBOBJECTIVE 1.4 To provide an evaluation of the human factors engineering requirements for the operation and maintenance of STANO equipment and the training of personnel.

RATIONALE: Obvious human factors engineering problems have been eliminated before newly developed hardware is delivered for field evaluation. However, many problem areas can be discovered only through controlled testing and evaluations that involve a large cross section of personnel operating the equipment. It is in these problem areas that human factors engineering data needs to be controlled as an input to the total evaluation of the STANO system.

SUPPORTING INFORMATION:

EEA 1.4.1 Were the controls provided for the operation of this equipment sufficient and adequate?

EEA 1.4.2 Were the correct displays provided for the operation of this equipment?

EEA 1.4.3 Were safety features designed into the equipment to prevent operator injury or operator induced malfunctions?

EEA 1.4.4 What injuries were sustained by operational and maintenance personnel during the utilization of this equipment?

EEA 1.4.5 What physiological effects were discovered as a result of the utilization of this equipment?

EEA 1.4.6 What were the effects of light during individual and unit operations?

EEA 1.4.7 What search and scan techniques were most effective when using STANO equipment? (by type)? (J)

EEA 1.4.8 What set up/tear down problems were detected relative to the STANO equipment?

EEA 1.4.9 How effective was the training received by each man on the STANO equipment he was required to operate?

EEA 1.4.1 Were the controls provided for the operation of this equipment sufficient and adequate?

RATIONALE: The proper design and providing of controls is an important factor that influences operator performance in nearly all man-machine systems. There are, however, no "good" or "bad" controls, but only those that are better or poorly suited for the task. This EEA was developed to evaluate the appropriateness of the controls in the performance of their necessary tasks.

DATA REQUIREMENTS:

1.4.1.1 Was manipulation of the controls simple and easily facilitated?

NOTE: Specific controls per each device should be itemized on spread sheets.

1.4.1.1.1 How much time was required in focusing the device?

1.4.1.1.2 Which controls were difficult to operate with an ungloved hand?

1.4.1.1.3 Which controls could not be manipulated easily when the operator was in any of the positions in which the equipment had to be operated?

1.4.1.1.4 Could the device be adjusted or focused while in motion?

NOTE: Number of items of equipment having faulty controls divided into items of equipment issued is data analysis product.

1.4.1.2 Did the control provide sufficient and satisfactory adjustment in the operation of the equipment?

1.4.1.2.1 Which controls did not perform the function for which they were designed?

1.4.1.2.2 Did the movement of the controls produce inappropriate and/or unmeaningful changes in the function of the equipment item?

1.4.1.2.3 Did the operator have difficulty in determining control position during the period he was operating the equipment?

EEA 1.4.2 Were the correct displays provided for the operation of this equipment?

RATIONALE: Equipment displays present information that human senses connot supply. In the accomplishment of this, consideration must be given to more than just making the display visible. This EEA evaluates the appropriateness of the equipment displays involved in this evaluation.

DATA REQUIREMENTS:

1.4.2.1 Are the displays suitable for the tasks that the operator must perform?

1.4.2.1.1 In how many cases was the operator unable to understand the information presented on the displays?

1.4.2.1.2 How many times was the operator unable to convert the output of these displays into correct decisions?

1.4.2.1.3 How many times did the display, by item of equipment, fail to meet the requirements imposed on it?

1.4.2.1.4 Do additional displays need to be provided to operate the equipment more effectively?

1.4.2.1.5 Should any displays be eliminated from multiple display equipment designs to improve operational effectiveness?

1.4.2.2 Do the displays meet the requirements at all levels of illumination?

1.4.2.2.1 Which displays cannot be read under the lowest levels of ambient illumination?

1.4.2.2.2 Which displays need to have the appropriate color filters to preserve the operators dark adaptation?

1.4.2.2.3 Which displays do not have controls to provide the proper levels of illumination?

1.4.2.3 Are the displays located to maximize operator efficiency?

1.4.2.3.1 Was the viewing distance from the operator to any display correct?

1.4.2.3.2 On which equipment is it difficult for the operator to identify the appropriate display to obtain the desired information?

NOTE: Sum of faulty displays divided into total items of equipments having displays provides the data product for analysis of this EEA.

1.4.2.4 What human engineering visual problems did the operators encounter?

1.4.2.4.1 Which lenses or displays fogged up due to humidity?

1.4.2.4.2 Could the device be used effectively by men wearing glasses?

EEA 1.4.3 Were safety features designed into the equipment to prevent operator injury or operator induced malfunctions?

RATIONALE: Since this program is an accelerated research and development program, there is the possibility that equipment being sent to the field will not have all of the appropriate safety features. An identification of lacking safety features will influence BOI and doctrine as well as redesign requirements.

DATA REQUIREMENTS:

1.4.3.1 What equipment design features show a lack of safety features?

1.4.3.1.1 What items of equipment require audible warning signals before operation?

1.4.3.1.2 On what equipment are warning lights not compatible with ambient illumination levels?

1.4.3.1.3 Did any man receive an electrical shock? Number, Why, Item.

1.4.3.1.4 On which equipment are struts and latches not provided to secure hinged and sliding components against accidental movement which could cause injury to personnel?

1.4.3.1.5 Did any operators or maintenance technicians sustain injuries that can be attributed to fautly design features in the equipment?

EEA 1.4.4 What injuries were sustained by operational and maintenance personnel during the utilization of this equipment?

RATIONALE: Personnel injuries caused by poor equipment design features must be identified. The type of personnel injury, the conditions under which the injury was sustained, and the circumstances surrounding the injury can provide valuable information as to the acceptability of the equipment design. Detailed information on personnel injury can also provide insights as to proper equipment employment and utilization.

DATA REQUIREMENTS:

1.4.4.1 What were the type and extent of injuries sustained by personnel operating this equipment?

NOTE: Analysis question. Data from the field on personnel injuries needs to be summarized as to type and frequency for each item of equipment being evaluated.

1.4.4.1.1 What type of injury resulted from the operational utilization of this equipment?

1.4.4.1.2 Under what conditions (weather, unit mission, fatigue, etc.) did the injury occur?

1.4.4.1.3 What circumstances surrounded the injury? (Provide a detailed account as to the reasons for the injury.)

1.4.4.2 What were the type and extent of injuries sustained by personnel maintaining this equipment?

NOTE: Some maintenance tasks are performed by operational personnel. Data from the field should specify those injuries sustained by personnel operating the equipment, operational personnel performing maintenance tasks, and maintenance technicians performaing required maintenance tasks.

1.4.4.2.1 What type of personnel injury resulted from the maintenance of this equipment?

1.4.4.2.2 Under what conditions (weather, unit mission, fatigue, etc.) did the injury occur?

1.4.4.2.3 What circumstances surrounded the injury? (Provide a detailed account as to the reasons for the injury.)

EEA 1.4.5 What physiological effects were discovered as a result of the utilization of this equipment?

RATIONALE: Research with first generation devices reveals that there are, in some cases, adverse physiological effects that influence operator performance. The extent of these effects are not fully known and should be investigated under field conditions.

DATA REQUIREMENTS:

1.4.5.1 To what extent was sickness attributable to equipment utilization?

1.4.5.1.1 How many cases of illness were reported during the conduct of field operations? (Analysis Question)

1.4.5.1.2 What was the nature of the illness?

1.4.5.1.3 If the individual had been using STANO equipment, at what time did he begin operating the equipment?

1.4.5.1.4 At what time did he become ill?

1.4.5.1.5 Could the individual continue using the equipment when he was experiencing symptoms of illness?

1.4.5.1.6 To what extent was individual performance affected by symptoms of illness?

1.4.5.1.7 How were the symptoms alleviated when the individual continued to use the equipment in the performance of his assigned mission?

1.4.5.2 How did the fatigue factor influence individual and unit performance during the conduct of this evaluation?

1.4.5.2.1 How many times did operators complain of eye fatigue?

1.4.5.2.2 How many times did operators wearing corrective lenses complain of eye fatigue?

1.4.5.2.3 At what time did the operator begin to use the equipment?

1.4.5.2.4 What were the periods of time an operator was assigned to operate continuously, by device?

1.4.5.2.5 Was there an adjustment period during which time eye fatigue and other physiological symptoms were noticed, but then disappeared as the individual continued to use the equipment? (J)

1.4.5.2.6 How long was this adjustment period? (J)

1.4.5.2.7 What techniques did the operator develop for alleviating the effects of eye fatigue? (J)

1.4.5.2.8 How did eye fatigue influence the performance of the individual using the equipment?

NOTE: Compare effectiveness early in the night with performance after 0200.

1.4.5.2.9 Were there any noticeable physiological interactions between eye fatigue and dark adaptation? (J)

1.4.5.2.10 How did fatigue influence the levels of unit performance?

NOTE: See note under 1.4.5.2.8.

1.4.5.2.11 Did vehicular motion have a noticeable effect upon operator fatigue levels?

EEA 1.4.6 What were the effects of light during individual and unit operations?

RATIONALE: It is possible that lights, bright reflections, bodies of water, sharp changes in light level, etc., would have adverse effects on the operation of some items of STANO equipment while perhaps at the same time, enhancing the effectiveness of others. These differential effects of light are essential to the determination of an optimum BOI.

DATA REQUIREMENTS:

1.4.6.1 How long did it take the individual's eyes to readjust after being taken off duty with the equipment? (J)

(ANALYSIS NOTE: Data to be recorded by item of equipment.)

1.4.6.2 What was the effect on performance of turning on a light (flashlight, flare, searchlight, etc.) while the operators were using the equipment?

1.4.6.2.1 Device name

1.4.6.2.2 Intensity of light, type of light

1.4.6.2.3 Time light turned on

1.4.6.2.4 Light was in front or, behind operator

1.4.6.2.5 Operator stopped using device

1.4.6.2.6 Time operator stopped using device

1.4.6.2.7 Targets detected while using item with light on

1.4.6.2.8 Targets detected by others using item with light off

1.4.6.2.9 Time light turned off

1.4.6.2.10 Time operator readjusted to darkness

1.4.6.3 Were bright reflections from water or other objects a problem for the viewing operator?

1.4.6.4 Was period of time necessary for an operator's eyes to adjust to the device before he reached his peak efficiency with the device? What was this period of time?

1.4.6.5 Were there times (during bright moonlight, etc.) when operators were more effective without the device than they were with it?

1.4.6.6 What light effects did aggressors observe that helped them?

EEA 1.4.7 What search and scan techniques were most effective when using STANO equipment? (by type)? (J)

RATIONALE: A variety of search and scan methods are expected to be used depending on training and equipment. These techniques also are expected to vary depending on the operator, for specific pieces of equipment. Data on this topic is considered essential to the test even if it must, by its very nature, be largely based on subjective reports by the equipment operators.

DATA REQUIREMENTS:

1.4.7.1 How many times was adjustment necessary? (By item)

1.4.7.2 When the device was focused at its extreme range did it fail to detect targets at lesser ranges?

1.4.7.3 Could close targets be detected when device was focused on distant targets?

1.4.7.4 Were targets at the edge of the device's field of view as readily detected as those nearer the center?

1.4.7.5 What were the differences between measures of effectiveness early compared to later in the same night, under varying lighting conditions?

EEA 1.4.8 What set up/tear down problems were detected relative to the STANO equipment?

RATIONALE: The set up/tear down process is not relevant to certain items of equipment being tested. For other items of equipment, however, this becomes quite pertinent in that it may require excessive time under field conditions, may be complicated or difficult, may make an excessive amount of noise, may not be done properly and thus degrade the performance of the equipment, may require that the operator expose himself to an unnecessary degree to possible enemy action, or may expose the positions of friendly forces. Obviously, if one or more of these conditions exist, even if the performance of the device is highly effective in other respects, it has an impact on the method of employment.

DATA REQUIREMENTS:

1.4.8.1 Was any part of the set up tear down process excessively difficult or complicated?

1.4.8.1.1 How much time did the set up process require?

1.4.8.1.2 How much time did the tear down process require?

1.4.8.1.3 Were dropped components damaged?

1.4.8.2 What effect did conditions of extreme darkness, as opposed to brighter levels of light, have on the set up or tear down process?

EEA 1.4.9 How effective was the training received by each man on the STANO equipment he was required to operate?

RATIONALE: The effectiveness of the pre-test training effort will strongly influence the type and extent of the training programs which will be developed after the test. This EEA addresses this question and is intended also to provide data on training improvements and modifications that become apparent during the test period. It is also assumed that some amount of learning will take place during the course of the test. The actual effects of the pre-test training then, will be more detectable during the earlier runs than during the latter, when it becomes impossible to distinguish between training and experience.

DATA REQUIREMENTS:

1.4.9.1 What deficiencies in training were detected during the first two test runs?

1.4.9.1.1 What time did the operator begin the set-up of the device?

1.4.9.1.2 What time did the operator complete the set-up of the device?

1.4.9.1.3 How many questions were asked by the operator during the set-up of the device?

1.4.9.1.4 How many questions were asked by the operator regarding the operation of the device? (by hour) Tally

1.4.9.1.5 How many errors were noted in the operation of the device? (by hour) List and describe (J)

1.4.9.1.6 Did any of the errors committed during the operation of the device result in a significant delay in the ability to use the device? If so, what were these errors? In minutes what was the lost time?

1.4.9.1.7 What time did the operator start and complete the break-down of the device?

1.4.9.1.8 How many errors did the operator commit during break-down of the device? (J) List and describe.

DISTRIBUTION: Same as basic plan

OBJECTIVE 2

1. PURPOSE: This appendix outlines the subobjectives and EEA pertaining to test objective 2.

2. OBJECTIVE 2: To determine the impact on selected aspects of firepower resulting from the use of STANO equipment.

RATIONALE: It is believed that some aspects of firepower will be affected by the use of STANO equipment. The assumption that underlies this objective is that the use of STANO equipment should help increase the effectiveness of available firepower by increasing the ability to engage targets of opportunity with aimed or observed fire during hours of reduced visibility.

3. SUPPORTING INFORMATION:

SUBOBJECTIVE 2.1 To evaluate the effect of using STANO equipment on the preparation for the conduct of fire missions.

SUBOBJECTIVE 2.2 To evaluate the effect of using STANO equipment on the conduct of fire missions.

SUBOBJECTIVE 2.3 To evaluate the effect which the interaction of STANO equipment with other STANO equipment has on firepower.

SUBOBJECTIVE 2.4 To evaluate the effect of interaction of STANO equipment with standard items of equipment concerning firepower.

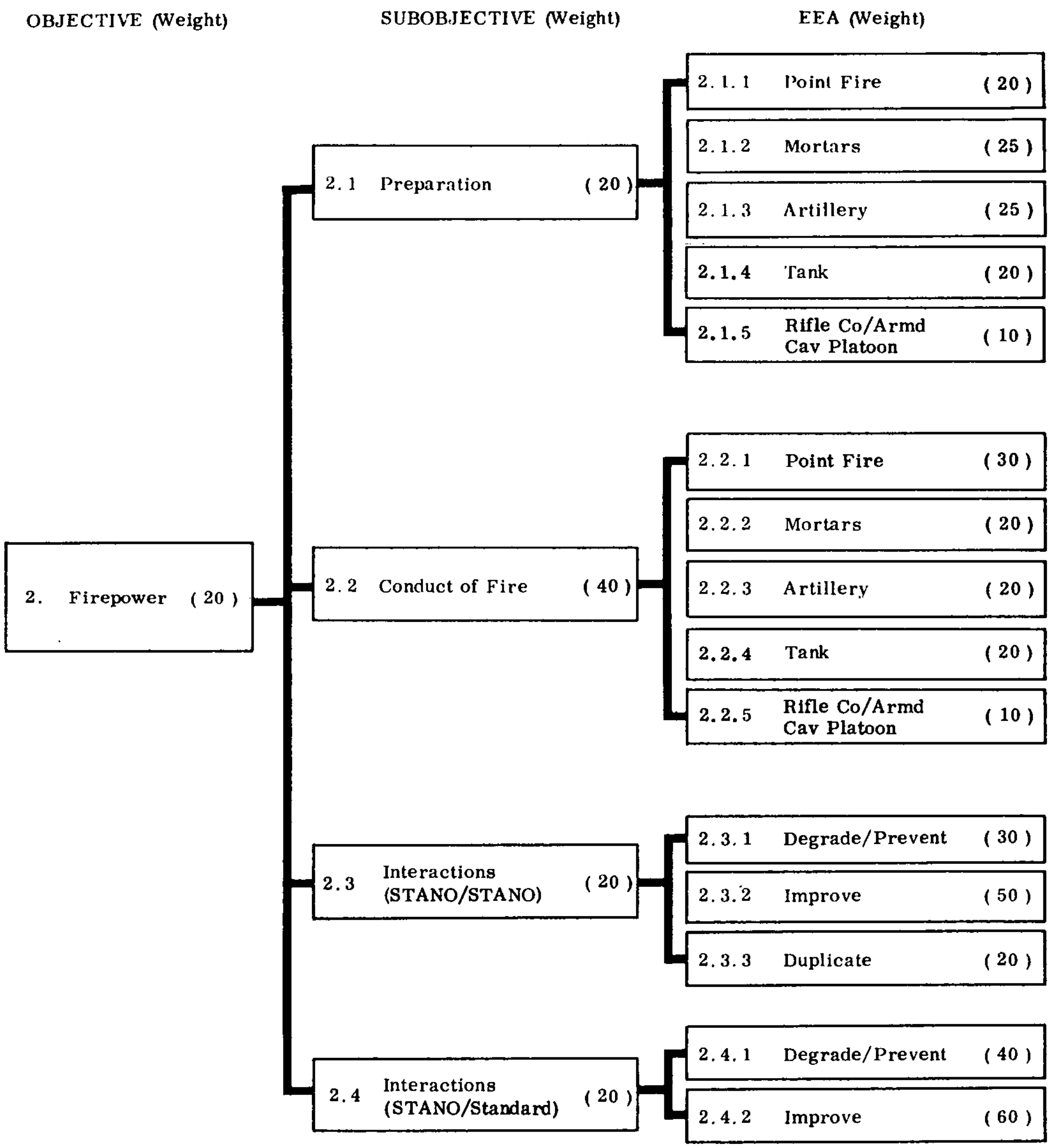


Figure D-8. Logic Diagram - Objective 2

SUBOBJECTIVE 2.1 To evaluate the effect of using STANO equipment on the preparation for the conduct of fire missions.

RATIONALE: It is believed that the use of STANO equipment may improve the ability of weapons crews to see during conditions of reduced visibility. This improvement may allow the crews to assemble and emplace the weapons and prepare their ammunntion more accurately, swiftly, and covertly. The preparation of fuses, emplacement of aiming stakes, emplacement of spades, alignment of weapons, and other operations required in the preparation of a firing position all may be enhanced.

SUPPORTING INFORMATION:

EEA 2.1.1 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions using point fire weapons?

EEA 2.1.2 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions using mortars?

EEA 2.1.3 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions using artillery?

EEA 2.1.4 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions using tank fires?

EEA 2.1.5 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions by rifle company and armored cavalry platoon commander?

EEA 2.1.1 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions using point fire weapons?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of preparation for conduct of fire missions for 90mm recoilless rifles, .50 caliber and 7.62mm machine guns, and rifle squads in terms of time saved and losses avoided in establishing firing positions. All questions for this EEA are to be answered for each point fire position established at night.

ANSWERS REQUIRED:

90mm recoilless rifle positions:	24 dry fire - 6 live fire
.50 caliber machine gun positions:	24 dry fire - 6 live fire
7.62mm machine gun positions:	72 dry fire -18 live fire
Rifle Squad positions:	216 dry fire -52 live fire

DATA REQUIREMENTS:

2.1.1.1 What is the average time from arrival at positions to completion of "ready to fire" status for 90mm recoilless rifle crews, .50 caliber machine gun crews, 7.62mm machine gun crews, and rifle squads?

2.1.1.1.1 Time unit arrived at fire position?

2.1.1.1.2 Time unit "ready to fire"

2.1.1.2 What is the average time from arrival of weapon crew at positions to completion of range cards?

2.1.1.2.1 Time crew arrived at positions?

2.1.1.2.2 Time range cards completed?

2.1.1.3 What percentage of crew served weapon and rifle squad positions are established without personal injury?

2.1.1.3.1 Number, type, and circumstance of personal injuries? Analysis Question.

NOTE: Analysis question. Obtain from human factors subobjective.

2.1.1.3.2 Number of fire positions occupied?

NOTE: Analysis question. Answer 2.1.1.3 by dividing 2.1.1.3.1 by 2.1.1.3.2.

2.1.1.4 What percentage of weapon crew and rifle squad positions are established with damage to equipment?

2.1.1.4.1 Was there any damage to equipment when occupying the fire position?

NOTE: Number of yes answers divided by number of replies to 2.1.1.1.1 provides answer to 2.1.1.4.

2.1.1.5 What percentage of weapon crew and rifle squad positions use no visible light?

2.1.1.5.1 Was visible light ever used at the fire position?

NOTE: Number of replies to 2.1.1.1.1 divided into number of no answers for 2.1.1.5.1 answers 2.1.1.5.

2.1.1.6 What percentage of weapon crew and rifle squad positions are cleared without equipment loss?

2.1.1.6.1 Was any equipment lost while clearing fire position?

NOTE: Divide number of <u>no</u> answers by 2.1.1.3.2.

2.1.1.7 What is the judgement of weapon crew or rifle squad leaders concerning value of STANO devices in completing security, cover, concealment, and camouflage of positions? (J)

2.1.1.7.1 Did crew or squad leader feel STANO devices helped security? How much? Excellent, good, adequate, poor, hindered, etc.

2.1.1.8 What is the judgement of weapon crew or rifle squad leaders concerning value of STANO devices in direction of fire? (J)

2.1.1.8.1 Did crew or squad leader feel STANO helped in directing fire? How much? Excellent, good, adequate, poor, hindered, etc.

EEA 2.1.2 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions using mortars?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of preparation for conduct of mortar fire missions in terms of time saved and losses avoided in the firing positions. All questions for this EEA are to be answered for each company mortar section position. Only data on positions prepared at night is needed.

2.1.2.1 What is the average time from receipt of order from company to completion of company mortar section position?

2.1.2.1.1 Time company order received?

2.1.2.1.2 Time mortar section in position.

2.1.2.2 What is the average time from start of reconnaissance to completion of mortar selection and layout?

2.1.2.2.1 Time reconnaissance started?

2.1.2.2.2 Time completed layout of position?

2.1.2.3 What is the average time for all mortar positions from selection of position to completion of preparation for occupation including setting out aiming stakes, aiming circles, and communications wire?

2.1.2.3.1 Time position preparation completed?

2.1.2.4 What is the average time for all mortar positions from arrival of first tube at position until "ready to fire"?

NOTE: Reference time will be figured on the basis of one tube "ready to fire". All other mortar positions may be registered from there.

2.1.2.4.1 Time first tube in position?

2.1.2.4.2 Time "ready to fire" announced?

2.1.2.5 What percentage of all mortar positions were occupied with no personal injury?

NOTE: Analysis question. Get from human factors and by counting responses to 2.1.2.1.2.

2.1.2.6 What percentage of all mortar positions were occupied with no damage to equipment?

2.1.2.6.1 Was any equipment damaged while occupying position?

2.1.2.7 What percentage of positions were occupied and ready to fire by the time ordered by appropriate commander?

2.1.2.7.1 Time ordered ready?

NOTE: Controller prevents commander from giving an as soon as possible or other such untimed order. Answer to 2.1.2.7 obtained from 2.1.2.7.1 and 2.1.2.4.2.

2.1.2.8 What is the average time from receipt of company order to completion of clearing of position by company mortar section?

2.1.2.8.1 Time of order?

2.1.2.8.2 Time position cleared?

NOTE: If order is informal, or "understood", data collector to establish time by query.

2.1.2.9 What percentage of all mortar positions were vacated with no equipment loss?

2.1.2.9.1 What equipment was lost while vacating position?

2.1.2.10 What percentage of company mortar section positions were detected by enemy player troops? (Aggressor Question)

2.1.2.10.1 What mortar positions did you detect?

NOTE: Scenario must make detection of each position possible, but not easy. Detection of whole company position does not count and should be avoided. Each detection <u>must</u> involve clearly locating individual mortar positions. Obtain from 2.1.2.10.1.

2.1.2.11 What is the judgement of the company heavy mortar platoon leader concerning value of STANO devices in preparation of positions to include fortification, camouflage/concealment, and security plan? (J)

NOTE: Data collector to query platoon leader for each position.

EEA 2.1.3 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions using artillery?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of preparation for conduct of artillery fire missions in terms of time required and losses avoided in the battery position. All questions for this EEA are to be answered for each artillery position established at night.

ANSWERS REQUIRED: 8 - dry fire

2 - live fire

NOTE: Use Data Form Questions and notes from 2.1.1 and 2.1.2.

2.1.3.1 What is the average time from receipt of displacement order to completion of occupation of position?

2.1.3.2 What is the average time from start of reconnaissance to completion of selection and layout of a firing position?

2.1.3.3 What is the average time from start to completion of preparing position for occupation, including setting out aiming stakes, aiming circle, and communication wire?

2.1.3.4 What is the average time from arrival of first gun at position to effecting of communication with fire direction center?

2.1.3.5 What is the average time from start to completion of distribution of ammunition specified?

NOTE: Scenario specifies quantities distributed.

2.1.3.6 Whatis the average time to position and prepare ammunition for each type of ammunition and fuse?

2.1.3.7 What is the average time from start to completion of shifting trails and relaying battery?

NOTE: Scenario to ensure at least one shift/relay per position.

2.1.3.8 What percentage of positions were occupied with no personal injury?

NOTE: Analysis Question. Divide number of times injuries were received by number of positions occupied.

2.1.3.9 What percentage of positions were occupied with no damage to equipment?

NOTE: Analysis Question. Divide number of times equipment damage occurred by number of positions occupied.

2.1.3.10 What percentage of positions were occupied and ready to fire by the time ordered?

NOTE: Scenario specifies times ordered.

2.1.3.11 What is the average time from receipt of order to completion or march order and clearing of position?

2.1.3.12 What percentage of positions were vacated with no equipment loss?

2.1.3.13 What percentage of firing positions were detected by enemy troops?

NOTE: Scenario must make it possible for enemy to detect arty unit.

2.1.3.14 What was the average time from first arrival to enemy detection, for each position detected by enemy player troops prior to firing first round?

2.1.3.15 What is the judgement of battery commander concerning assistance of STANO devices in completing fortification of positions? (J)

NOTE: Requires data collector to query commander for each position.

2.1.3.15.1 Did crew or squad leader feel STANO devices helped security? How much? Excellent, good, adequate, poor, hindered, etc.

2.1.3.16 What is the judgement of battery commander concerning assistance of STANO devices in completing camouflage/concealment of position? (J)

NOTE: Requires data collector to query commander for each position.

2.1.3.17 What is the judgement of battery commander concerning assistance of STANO devices in establishing position security?

NOTE: Requires data collector to query commander for each position.

EEA 2.1.4 What effect does the use of STANO equipment have on preparation for conduct of tank fire missions?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of positioning tanks, preparing range cards, and preparation for fire in terms of time saved and losses avoided. All questions for this EEA are to be answered for each positioning of a tank, whether for dry fire or live fire. Data is to be collected at each tank position. Only data on night operations are needed. During the course of the week-long maneuver, each of the tanks in the friendly player force is to establish enough positions during tactical maneuver and live fire exercise for a total of at least 32 answers for all tanks combined.

DATA REQUIREMENTS:

2.1.4.1 What is the average time from departure of tank from platoon release point to decision by tank commander that tank is correctly in position?

NOTE: Requires data collector to monitor platoon commander on each positioning as to when each tank commander radios complete. Data collector should ride platoon commander's tank, and be supplied with communication equipment. (Average time over same distance)

2.1.4.2 What is the time from completion of positioning to completion of range card for each tank?

2.1.4.2.1 At what time was range card started for each tank?

2.1.4.2.2 At what time was range card completed for each tank?

NOTE: Requires data collector to be shown range card upon completion.

2.1.4.3 What percentage of range cards include end or sectors of responsibility?

2.1.4.4 What percentage of total aggressor players presented by scenario in the sector are reported?

NOTE: Requires data collector to note date/time of detection by quering tank commander, and turn in to evaluators for comparison with the actual aggressor situation at the time.

2.1.4.5 What percentage of aggressor players presented by scenario in the sector, within 200 meters of the tank position, are reported by tank commander?

NOTE: (Same as 2.1.4.4)

2.1.4.6 What percentage of aggressor targets presented by scenario in the sector, between 200 meters and 1500 meters from the tank position, are reported by tank commander?

NOTE: (Same as 2.1.4.4)

2.1.4.7 What percentage of aggressor targets presented by scenario in the sector, beyond 1500 meters from the tank position, are reported by tank commander?

NOTE: (Same as 2.1.4.4)

2.1.4.8 What is the average number of reference points and potential targets included on range cards?

NOTE: (Same as 2.1.4.4)

2.1.4.9 What are the reports of tank commanders regarding value of STANO devices in determination of range (and/or quadrant elevation), and deflection?

NOTE: Requires data collector to query tank commander at completion of each range card.

2.1.4.10 Personal injury?

2.1.4.11 What items of equipment were damaged? Occurred during occupation of position? Occurred during evacuation of position?

2.1.4.12 What items of standard issue equipment were lost during occupation of position?

2.1.4.13 What items of standard issue equipment were lost during evacuation of position?

2.1.4.14 What percentage of positions are occupied without use of visible light?

2.1.4.14.1 How many positions were occupied without white light?

2.1.4.15 What percentage of positions are vacated without use of visible light?

2.1.4.15.1 How many positions were vacated without white light?

2.1.4.16 What are the reports of tank commanders concerning value of STANO devices in positioning and preparation for conduct of fire?

NOTE: Requires data collector to query tank commander upon vacation of each position.

2.1.4.17 Tabulate reasons for inability to meet fire requests/ orders.

NOTE: In some cases, may require data collector to query for reason.

EEA 2.1.5 What effect does the use of STANO equipment have on the preparation for the conduct of fire missions by Rifle Company and Armed Cavalry Platoon Commanders?

RATIONALE: It is believed that the use of STANO equipment will improve the ability of commanders to plan the organization of the ground, develop fire plans and to assess their positions. It may also improve the selection and layout of firing positions by reconnaissance parties.

DATA REQUIREMENTS:

2.1.5.1 What is the average time from arrival of reconnaissance party to completion of organization of the ground?

2.1.5.2 What is the average time from units arrival at position to completion of fire plan?

<u>Commander Questionnaire</u>

2.1.5.3 Did the use of STANO equipment improve the commander's assessment of positions? (J)

2.1.5.4 Did the use of STANO equipment reduce the time required to complete organization of the ground? (J)

2.1.5.5 Did the use of STANO equipment improve the commander's assessment of the areas to be covered by fires? (J)

2.1.5.6 Did the use of STANO equipment reduce the time required to complete the fire plan? (J)

SUBOBJECTIVE 2.2 To evaluate the effect of using STANO equipment on the conduct of fire missions.

RATIONALE: The utilization of STANO equipment may improve the ability of gunners for direct fire weapons, and forward observers for indirect fire weapons to observe target location, target activity and to assess the effect of fires. This improvement may reduce the time and number of rounds required in fire adjustment and may bring more rounds to bear on targets.

SUPPORTING INFORMATION:

EEA 2.2.1 What effect does the use of STANO equipment have on the conduct of fire missions using point fire weapons?

EEA 2.2.2 What effect does the use of STANO equipment have on the conduct of fire missions using mortars?

EEA 2.2.3 What effect does the use of STANO equipment have on the conduct of fire missions using artillery?

EEA 2.2.4 What effect does the use of STANO equipment have on the conduct of fire missions using tank fires?

EEA 2.2.5 What effect does the use of STANO equipment have on the direction of conduct of fire missions by Rifle Company and Armored Cavalry Platoon Commanders?

EEA 2.2.1 What effect does the use of STANO equipment have on the conduct of fire missions using point fire weapons?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of fire missions for 90mm recoilless rifles, .50 caliber and 7.62 machine guns, and rifle squads in terms of amount of fire delivered, timeliness and accuracy of fire, flexibility, and avoidance of losses. During dry firing the moment of firing is to be simulated by an equivalent act such as pulling the trigger or lanyard. Questions concerning accuracy are to be answered for each fire mission ordered. Data is to be collected at firing positions both during dry fire in maneuver and during live fire in the live fire maneuver and in six separately conducted live fire exercises. Only data on night fire missions is needed.

ANSWERS REQUIRED:

90mm Recoilless Rifle:	32 scheduled live fire missions, and 96 or more dry fire missions
.50 caliber Machine Gun:	32 scheduled live fire missions, and 96 or more dry fire missions
7.62mm Machine Gun:	32 scheduled live fire missions, and 96 or more dry fire missions
Rifle Squad:	32 scheduled live fire missions, and 96 or more dry fire missions

DATA REQUIREMENTS:

2.2.1.1 What percentage of fire missions ordered by next higher echelon were fired by a weapons crew or rifle squad as ordered?

2.2.1.2 What is the average time from receipt of order to the firing of the first round in missions for each weapons crew?

NOTE: Count missions originzted by crew or squad itself as order received when crew/squad leader starts fire mission order.

2.2.1.3 What percentage of missions were fired by the time ordered?

NOTE: "As soon as possible" fire mission always counted as delivered on time; "now" mission on time if completed with no unexpected delay.

2.2.1.4 What percentage of missions placed any rounds on target?

NOTE: Live fire only.

2.2.1.4.1 What percentage of targets were engaged?

NOTE: Live fire only.

2.2.1.5 What percentage of rounds fired are "hits" on target, for each type weapon?

2.2.1.6 What is the average number of hits per target?

NOTE: Special live-fire exercises only.

2.2.1.7 What percentage of missions fired have any rounds delivered outside tactical or safety boundaries?

NOTE: Live fire only.

2.2.1.8 What percentage of missions have no personal injury?

NOTE: Live fire only.

2.2.1.9 What percentage of missions have no damage to equipment?

2.2.1.10 What percentage of missions have no misfire/malfunction/stoppage of weapon (Breakdown by weapon)?

NOTE: Live fire only.

2.2.1.11 What percentage of missions have no improper procedure or have no improper correction by crew/squad leader?

2.2.1.12 What percentage of missions use STANO devices?

2.2.1.13 What percentage of missions use no visible light?

2.2.1.14 What is the judgement of crew/squad leaders as to the assistance of STANO devices in control of fire? (J)

NOTE: Query leader each mission.

2.2.1.15 What is the judgement of crew/squad leaders as to the assistance of STANO devices in handling of weapons? (J)

NOTE: Ask leader each mission.

2.2.1.16 What was the average time from target exposure to delivery of fire?

2.2.1.17 What percentage of targets at each distance presented are engaged?

NOTE: Live fire; requires placement of targets.

2.2.1.18 What percent of the targets in defilade were engaged?

NOTE: Live fire; requires placement of targets.

2.2.1.19 What was the percentage of targets per sector not hit? (Determine distribution of fire and coverage of sectors of responsibility, live fire only)

2.2.1.20 What was the average time to shift fires from one zone to another?

NOTE: Live fire.

EEA 2.2.2 What effect does the use of STANO equipment have on the conduct of fire missions using mortars?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of fire missions in terms of amount of fire delivered, timeliness and accuracy of fire, flexibility, and avoidance of losses. During dry firing the moment of firing is to be simulated by an equivalent act such as the leader's hand and head motions without a round but similar to actual dropping of the round. Questions concerning accuracy are to be answered during live fire only; all other questions are to be answered during both live and dry fire portions of the exercise. All questions for this EEA are to be answered for each mortar fire mission requested, whether or not the mission is through a fire direction center. Data is to be collected at forward observer positions, fire direction center, commander's headquarters, or firing position as appropriate. Only data on missions fired at night is needed.

DATA REQUIREMENTS:

2.2.2.1 What percent of company mortar section missions are fired?

2.2.2.2 What percent of missions are adjusted by mortar forward observers?

2.2.2.3 Tabulate missions requested by type mission, type round, and type fuse.

2.2.2.4 What is the average time from receipt of fire mission at mortar firing position to firing of first round?

2.2.2.5 What percent of all mortar fire missions are initiated by the time requested?

NOTE: As soon as possible fire missions always counted as delivered on time.

2.2.2.6 What is the average number of rounds fired in adjustment prior to "fire for effect" for each type fuse?

NOTE: Live fire only.

2.2.2.7 What is the average breadth of the sheaf?

NOTE: Live fire only, requires data collector to query adjuster for estimate for each mission.

2.2.2.8 What percent of missions have any rounds reported out of tactical or safety fire boundaries?

2.2.2.9 What percent of missions have unsafe firing procedure corrected by mortar element commander?

NOTE: Live fire only.

2.2.2.10 What percent of missions have no personal injury?

2.2.2.11 What percent of missions have no equipment damage?

2.2.2.12 What percent of missions use no visible light at the firing position?

2.2.2.13 What percent of missions does adjuster use any STANO device?

EEA 2.2.3 What effect does the use of STANO equipment have on the conduct of fire missions using artillery?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of fire missions in terms of amount of fire delivered, timeliness and accuracy of fire, flexibility and avoidance of losses. During dry firing, the moment of firing is to be simulated by an equivalent act such as pulling a lanyard. Questions concerning accuracy are to be answered during live fire; all other questions are to be answered during both live and dry fire. All questions for this EEA are to be answered for each artillery fire mission requested. Data is to be collected at forward observer position, dire direction center, or firing battery as appropriate. Only data on night fire missions is needed.

ANSWERS REQUIRED:

32 Live fire missions at night

32 Scheduled plus any additional number of unscheduled dry fire missions at night

DATA REQUIREMENTS:

2.2.3.1 What percentage of fire missions requested are fired?

2.2.3.2 What percentage of missions are adjusted by forward observer?

2.2.3.3 Tabulate missions fired by type of mission.

2.2.3.4 Tabulate rounds fired by type of ordnance and fuse.

2.2.3.5 What is the average time from receipt of request at fire direction center to firing of first round?

2.2.3.6 What percentage of missions were initiated by the time requested?

NOTE: "As soon as possible fire" missions always counted as delivered on time.

2.2.3.7 What is the average number of rounds fired in adjustment prior to "fire for effect" for each type of fuse used?

NOTE: Live fire only.

2.2.3.8 What is the average time from command of deflection and quadrant to command to fire?

2.2.3.9 What is the average breadth of the sheaf?

NOTE: Live fire only, requires data collector to ask adjuster for estimate for each mission.

2.2.3.10 What percentage of missions have any rounds reported out of battery by observer?

NOTE: Live fire only.

2.2.3.11 What percentage of missions have any rounds reported out of tactical or safety fire boundaries?

NOTE: Live fire only.

2.2.3.12 What percentage of missions have no personal injury?

2.2.3.13 What percentage of missions have no damage to equipment?

2.2.3.14 What percentage of missions have unsafe battery procedure corrected by commander?

NOTE: In addition to direct observation, data collector must query battery commander each mission.

2.2.3.15 What percentage of missions does adjuster use any STANO device?

2.2.3.16 What percentage of missions is no visible light used at the firing position?

2.2.4.7 What percentage of targets presented are hit?

NOTE: (Same as 2.2.4.5)

2.2.4.7.1 What percentage of main gun stationary targets presented with illumination are hit?

2.2.4.7.2 What percentage of .50 caliber machine gun stationary targets presented with illumination are hit?

2.2.4.7.3 What percentage of coaxial machine guns stationary targets presented with illumination are hit?

2.2.4.7.4 What percentage of main gun moving targets presented with illumination are hit?

2.2.4.7.5 What percentage of .50 caliber machine guns moving targets presented with illumination are hit?

2.2.4.7.6 What percentage of coaxial machine guns moving targets presented with illumination are hit?

2.2.4.7.7 What percentage of main gun stationary targets presented without illumination are hit?

2.2.4.7.8 What percentage of .50 caliber machine gun stationary targets presented without illumination are hit?

2.2.4.7.9 What percentage of coaxial machine guns stationary targets presented without illumination are hit?

2.2.4.7.10 What percentage of main gun moving targets presented without illumination are hit?

2.2.4.7.11 What percentage of .50 caliber moving targets presented without illumination are hit?

2.2.4.7.12 What percentage of coaxial machine gun's moving targets presented without illumination are hit?

2.2.4.7.11 What percentage of .50 caliber moving targets presented without illumination are hit?

2.2.4.8 What percentage of main gun fire missions hit target?

NOTE: (Same as 2.2.4.5)

2.2.4.8.1 What percentage of main gun rounds against stationary targets with illumination hit targets?

2.2.4.8.2 What percentage of main gun rounds against moving targets with illumination hit targets?

2.2.4.8.3 What percentage of main gun rounds against stationary targets without illumination hit targets?

2.2.4.8.4 What percentage of main gun rounds against moving targets without illumination hit targets?

NOTE: (Same as 2.2.4.5)

2.2.4.9 What percentage of hits are second round hits?

NOTE: (Same as 2.2.4.5)

2.2.4.10 What is the average time to break out and store ten rounds of main gun ammunition without visible light?

NOTE: To be measured off range using inert rounds for each tank having completed live fire.

2.2.4.11 What is the average time from removal of empty box of .50 caliber ammunition from machine guns to fire off first round of reloaded caliber .50 ammunition?

NOTE: (Same as 2.2.4.5)

2.2.4.12 What is the judgment of tank commanders concerning value of CSNVTA devices in setting headspace and timing for .50 caliber machine guns? (J)

NOTE: Requires collector to query tank commanders each time headspace/timing is set.

2.2.4.13 What is the judgment of tank commanders concerning value of STANO devices in conduct of fire? (J)

NOTE: Requires collector to query tank commander after each live fire exercise.

EEA 2.2.4 What effect does the use of STANO equipment have on conduct of fire missions using tank fires?

RATIONALE: Various means of employing STANO devices may have an effect on the efficiency of armor fire missions in terms of timeliness and accuracy of fire, flexibility (type weapons, ranges, type targets), and avoidance of accidental losses. During dry firing, the moment of firing is to be simulated. Questions concerning accuracy of fire and loading of ammunition are to be answered during a live fire exercise; all other questions are to be answered during both live fire and dry fire. All questions for this EEA are to be answered for each armor fire mission performed. Only data on night firing is needed.

ANSWERS REQUIRED:

36 live fire missions without illumination

36 live fire missions with illumination

At least 32 blank dry fire missions without illumination

Any number blank dry fire mission with illumination (each tank counted separately toward total)

DATA REQUIREMENTS:

2.2.4.1 What percentage of fire missions used any STANO equipment?

2.2.4.2 What is the average time from initiation of fire mission to moment of fire?

2.2.4.3 What percentage of fire missions use no visible light?

2.2.4.4 What is the average time to break out and store 400 rounds of .50 caliber ammunition without visible light?

NOTE: To be measured during loading for live fire exercise only.

2.2.4.5 What is the average time for tank to complete the live firing exercise course?

NOTE: Live fire exercise only, to be set up similar to Table VIII B in FM 17-12 (Tank Gunnery)

2.2.4.6 What is the average number of departures from prescribed course in live fire exercise?

NOTE: (Same as 2.2.4.5)

EEA 2.2.5 What effect does the use of STANO equipment have on the direction of conduct of fire missions by Rifle Company and Armored Cavalry Platoon Commanders?

RATIONALE: It is believed that the use of STANO equipment will improve the ability of the commander to control and direct the fires of his subordinate units, and improve his ability to assess the effects of their fires, and reduce the time required to react to threats as they are detected.

DATA REQUIREMENTS:

Commanders Questionnaire

2.2.5.1 Did the use of STANO equipment improve the commander's ability to control the fires of his subordinate elements?

2.2.5.2 Did the use of STANO equipment reduce the time required to shift fires from one target to another?

2.2.5.3 Did the use of STANO equipment reduce the time between detection of targets and command to a unit to engage the target?

2.2.5.4 Did the use of STANO equipment improve the commander's ability to assess the effects of his fires?

SUBOBJECTIVE 2.3 To evaluate the effect which the interaction of STANO equipment with other STANO equipment has on firepower.

RATIONALE: Certain STANO equipment may interfere with, degrade the performance of, or prevent the use of other STANO items. This may result from over-illumination, from electronic interference, or from other causes. Some items of STANO equipment may augment or improve the performance of another item, when they are used in the same equipment mix. Some STANO items are directly in competition in regard to the type and quality of information they produce. Data must be obtained to identify equipment interactions in order to maximize effectiveness of equipment mixes.

SUPPORTING INFORMATION:

EEA 2.3.1 Do any items of STANO equipment interfere with, degrade the performance of, or prevent the use of other STANO items concerning firepower?

EEA 2.3.2 Does employment of any STANO equipment significantly improve the performance of other STANO equipment concerning firepower?

EEA 2.3.3 Do two or more STANO items perform essentially the same functions concerning firepower?

Cause of Interference	Affected by Interference																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-9

EEA 2.3.1 Do any items of STANO equipment interfere with, degrade the performance of, or prevent the use of other STANO items concerning firepower?

RATIONALE: It is probable, due to the complexity and sensitivity of items employed for STANO, that one item may interfere with, degrade or prevent the use of other items. This may be due to over-illumination, electronic interference, or other reasons. Tests should be designed to identify all equipment combinations which are not compatible.

DATA REQUIREMENTS:

2.3.1.1 What items of STANO equipment degrade the performance of any other items of STANO equipment?

2.3.1.2 What items of STANO equipment prevented the use of any other items of STANO equipment?

2.3.1.3 Were any measures or field expedients developed to overcome any such adverse interference?

2.3.1.4 What was the duration of the interference?

2.3.1.5 What was the cause of the interference?

2.3.1.6 What was the extent of the degradation?

NOTE: It is assumed that higher BOI's will result in more interferences, degradations and preventions since more equipment will be present to cause them. It is therefore recommended that this EEA be used as descriptive information and not be given any weight in the analysis.

NOTE: Indicate on the matrix shown below the items of STANO equipment which interfere by degrading or preventing the use of any other STANO item of equipment when used in support of firepower. Use D for degradation and P for preventing the use. If interference is temporary, indicate its duration in minutes after P or D. If such factors as distance between items or levels of light intensity involved are the controlling factors indicate in the remarks section. indicate in the remarks section measures or field expedients developed to overcome adverse interference.

EEA 2.3.2 Does employment of any STANO equipment significantly improve the performance of other STANO equipment concerning firepower?

RATIONALE: It is probable that certain items of equipment, used in combination, will improve the performance of one or more items of equipment. This may consist of extensions of its effective range of operation, its accuracy in target acquisition and identification, reduction in false alarms, or other similar performance improvement. This EEA is designed to identify all combinations of STANO equipment items which complement item performance.

DATA REQUIREMENT:

2.3.2.1 Did any combination of STANO equipment result in improved performance for one of the items? Give specific details on each such combination and the type and extent of improvement achieved.

NOTE: Indicate in the matrix shown below the items of STANO equipment which improved the performance of other STANO items in support of firepower. Enter R for improvement in range followed by the numerical increase in meters, e.g., R 100. Enter C for clarity of image or transmission. Enter any other improvement discovered by using the remarks section.

Cause of Improvement	Affected by Improvement																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY&NBP																											

Remarks:

Figure D-10

EEA 2.3.3 Do two or more STANO items perform essentially the same functions concerning firepower?

RATIONALE: It is probable that within the STANO family of equipment there are items that have duplicate capabilities and produce essentially the same information, although the engineering design principles for each may be entirely different. This is desirable during the developmental and test stage, but the field tests should be tailored to identify any such duplication and to produce information on the relative merits of each item in such areas as reliability, maintainability, ease of operation, and other similar factors that can serve as a basis for decisions on which item should be selected for standardization and inventory procurement.

DATA REQUIREMENTS:

2.3.3.1 Were there any STANO items which produced duplicate information in support of firepower?

2.3.3.2 Whenever two items or more perform the same function which one was more reliable?

2.3.3.3 Whenever two items or more perform the same function which one was easier to maintain?

2.3.3.4 Whenever two items or more perform the same function which one was easier to operate?

2.3.3.5 Did the item have other characteristics such as weight, transportability, etc., which made it more desirable? Where possible, amplify the information providing specific details.

NOTE: This data requirement can and should be derived from a set of objective data from matrix.

NOTE: Indicate on the matrix shown below the items of STANO equipment which duplicate the performance of other STANO items in support of firepower. Enter S for items which duplicate (perform the same) or very similar function, in the square corresponding to the two items. Explain in the remarks paragraph the item recommended for retention and the reasons in such areas as reliability, lightweight, ease of operation and maintenance. If possible, amplify the information.

Cause of Duplication	Affected by Duplication																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
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21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-11

SUBOBJECTIVE 2.4 To evaluate the effect of interactions of STANO equipment with standard items of equipment concerning firepower.

RATIONALE: Employment of STANO equipment may prevent, degrade or enhance the use of standard items of equipment. Conversely, standard items of equipment may prevent, degrade or enhance the use of STANO equipment. This may be caused by over-illumination, electronic interference, vibration or other reasons. It is necessary to determine type and extent of the interference and field expedients developed to overcome this interference. Also, it is necessary to determine and measure the factors which control the interference or enhance event, e.g., distance between items or levels of intensity involved.

SUPPORTING INFORMATION:

EEA 2.4.1 Do items of STANO equipment under test interfere with, degrade the performance of, or prevent the use of any standard item and conversely; do standard items interfere with, degrade the performance of, or prevent the use of, any item of STANO equipment tested concerning firepower?

EEA 2.4.2 Does employment of any STANO equipment significantly improve the performance of a standard item of equipment and conversely, does any standard item significantly improve the performance of a STANO item concerning firepower?

EEA 2.4.1 Do items of STANO equipment under test interfere with, degrade the performance of, or prevent the use of any standard item and conversely, do standard items interfere with, degrade the performance of, or prevent the use of, any item of STANO equipment tested concerning firepower?

RATIONALE: It is possible, due to the complexity and sensitivity of items employed for STANO, that one item may interfere with, degrade, or prevent the use of standard items. Conversely, standard items of equipment may prevent, degrade or enhance the use of STANO equipment. This may be due to electronic interference, overloading, or other reasons. Tests should be designed to identify all equipment combinations which are not compatible.

DATA REQUIREMENTS:

2.4.1.1 Did any item of STANO equipment interfere with, degrade the performance of, or prevent the use of any standard item of equipment? If so, identify the item(s) and describe the cause and extent of interference.

2.4.1.2 Did any item of standard equipment interfere with, degrade the performance of, or prevent the use of any STANO item of equipment? If so, identify the items and describe the cause of extent of interference.

2.4.1.3 Were any measures or field expedients developed to overcome any such adverse interference? Describe.

2.4.1.4 Was the interference of a temporary nature? If so, what was the duration of the interference?

NOTE: It may be possible to collect information for answering all the above questions on one data form using a matrix.

Affected by Interference / Cause of Interference	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-12

EEA 2.4.2 Does employment of any STANO equipment significantly improve the performance of a standard item of equipment and conversely, does any standard item significantly improve the performance of a STANO item concerning firepower?

RATIONALE: It is possible that certain STANO items of equipment, used in combination, will improve the performance of one or more standard items of equipment. Conversely, standard items of equipment may significantly improve the performance of a STANO item. This may consist of extension of effective range of operation, improvement of accuracy in target acquisition and identification, reduction in false alarms, or other similar performance improvement. Tests should be designed to identify all equipment combinations which are complementary.

DATA REQUIREMENTS:

2.4.2.1 Did any combinations of STANO equipment result in improved performance of any standard item? Give specific details on each such combination and the type and extent of improvement achieved. State the conditions such as distance between items, levels of ambient light etc. which control the enhancement.

2.4.2.2 Did any item of standard equipment improve the performance of any STANO item of equipment? If so, identify the items and describe the improvement.

2.4.2.3 Were any measures or field expedients developed to continue the improved condition?

2.4.2.4 Was the improvement of a temporary nature? If so, what was the duration of the improvement?

NOTE: It may be possible to collect information for answering all the above questions on one data form using a matrix.

DISTRIBUTION: Same as basic plan

Affected by Improvement / Cause of Improvement	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-13

OBJECTIVE 3

1. PURPOSE: This appendix outlines the subobjectives and EEA pertaining to test objective 3.

2. OBJECTIVE 3: To determine the impact on mobility resulting from the use of STANO equipment.

RATIONALE: The use of STANO equipment should facilitate movement through improved navigation, control, coordination, timeliness, and security. This objective is directed toward obtaining information with which to evaluate the improvement over present capabilities.

3. SUPPORTING INFORMATION:

SUBOBJECTIVE 3.1 To evaluate the impact of STANO equipment on ground mobility.

SUBOBJECTIVE 3.2 To evaluate the impact of STANO equipment on air mobility.

SUBOBJECTIVE 3.3. To determine the effect of interactions of STANO equipment with other STANO equipment relative to mobility.

SUBOBJECTIVE 3.4 To determine the effect of interactions of STANO equipment with other standard items of equipment relative to mobility.

SUBOBJECTIVE 3.5 To provide an evaluation of human factors engineering requirements for the operation of STANO equipment.

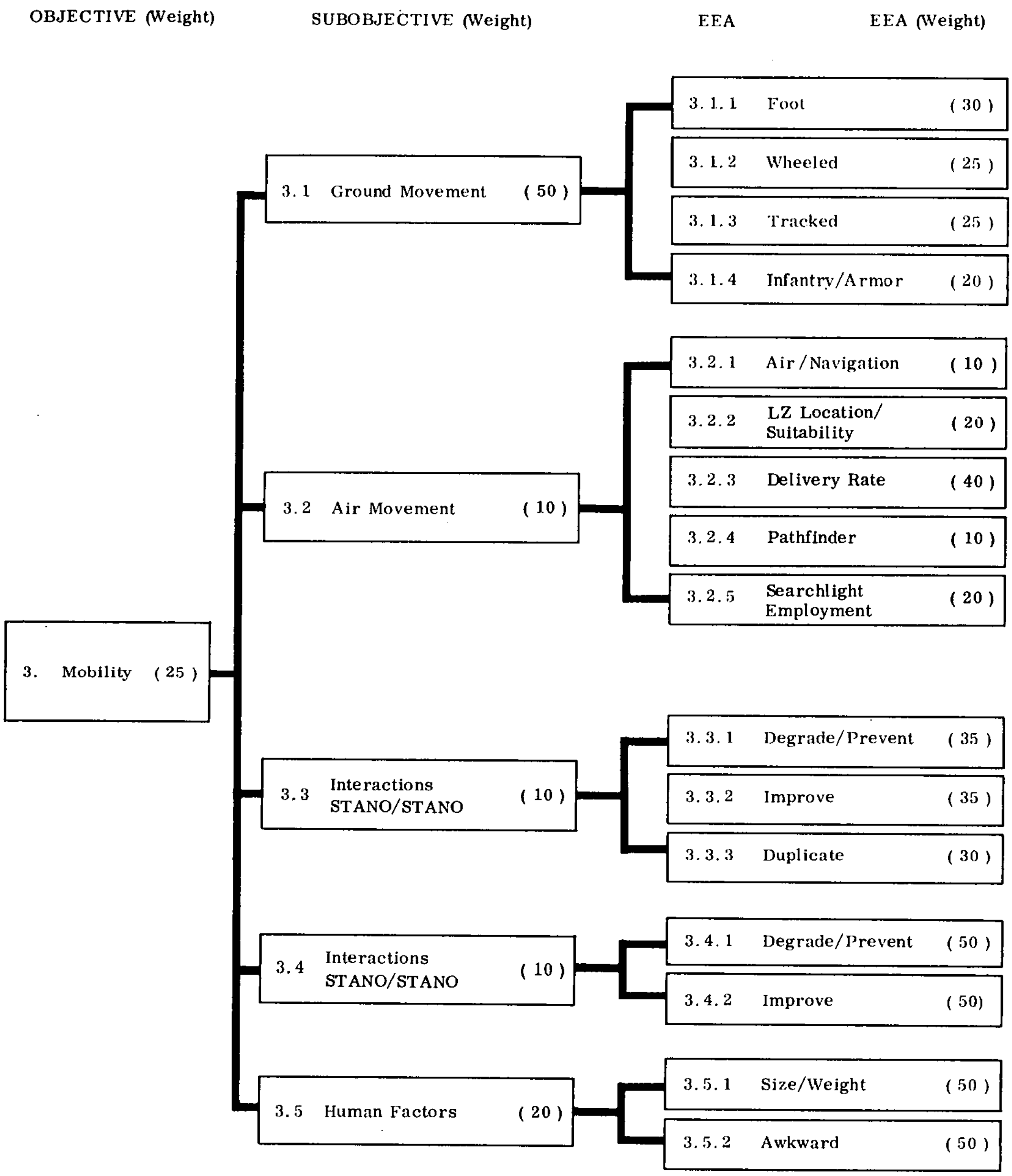

Figure D-14. Logic Diagram - Objective 3

SUBOBJECTIVE 3.1 To evaluate the impact of equipment on ground mobility.

RATIONALE: The use of equipment should improve the ground mobility of the individual soldier as well as mounted units under conditions of limited visibility.

SUPPORTING INFORMATION:

EEA 3.1.1 What effect does equipment have on ground mobility?

EEA 3.1.2 What effect does equipment have on wheeled vehicle movements?

NOTE: This answer can be obtained by analysis of 3.1.1.

EEA 3.1.3 What effect does equipment have on tracked vehicle movements?

NOTE: This answer can be obtained by analysis of 3.1.1.

EEA 3.1.4 What effect does equipment have on the mobility of cross-attached infantry and armor elements?

NOTE: This answer can be obtained by analysis of 3.1.1.

EEA 3.1.1 What effect does STANO equipment have on foot movements?

RATIONALE: The use of STANO equipment is expected to enable the dismounted soldier to increase his rate of movement at night. This equipment will permit him to maintain orientation while moving and to see and overcome or bypass obstacles. In addition, the improved visibility provided by STANO equipment permits increased intervals between dismounted individuals and organizational elements with less chance of losing contact.

3.1.1.1 How many dismounted tactical unit road marches were made?

3.1.1.1.1 What unit or unit element made the move?

3.1.1.1.2 What type formation was employed?

3.1.1.1.3 How many dismounted individuals were in the formation?

3.1.1.2 What was the average rate of speed (KPH) for dismounted tactical unit road marches conducted?

3.1.1.2.1 At what location did the movement start? (Map Coordinates)

3.1.1.2.2 At what location was the movement completed? (Map Coordinates)

3.1.1.2.3 What distance (kilometers) was covered during the movement?

3.1.1.2.4 At what time did the movement start?

3.1.1.2.4.1 If movement did not start on schedule, why not? (J)

3.1.1.2.4.2 At what time did the first element start?

3.1.1.2.4.3 At what time did the last element start?

3.1.1.2.5 At what time was the movement completed?

3.1.1.2.6 Did any delays occur enroute?

3.1.1.2.7 At what time did each delay occur?

3.1.1.2.8 What was the cause of each delay? (J)

3.1.1.2.9 At what time did movement resume after each delay?

3.1.1.3 What percentage of mines and obstacles present were discovered during dismounted tactical unit road marches?

3.1.1.3.1 How many mines/obstacles were present at each site? (Aggressor Question)

3.1.1.3.2 How many mines/obstacles were discovered by friendly forces?

3.1.1.3.3 At what time did friendly forces cross undiscovered mines/obstacles? What type of enemy mine/obstacles were not discovered by friendly forces?

AGGRESSOR QUESTIONS

3.1.1.4 What percentage of dismounted tactical unit road marches were detected by the aggressor? Why?

3.1.1.4.1 Was the movement detected by aggressor? What was detected?

3.1.1.4.2 At what location was the aggressor(s) who detected the movement? What was detected? How was it detected? (Map Coordinates)

3.1.1.4.3 At what location was the friendly unit, element, individual, vehicle, etc., located at the time the movement was discovered by the aggressor? (Map Coordinates)

3.1.1.4.4 At what reported range did the aggressor(s) detect the friendly unit, element, individual, vehicle, etc.? (Map Coordinates) (Answer to 3.1.1.4.2 and 3.1.1.4.3)

3.1.1.5 What percentage of dismounted unit tactical road marches arrived on schedule? What was the variation from the commander's estimate of the time required to complete each road march?

3.1.1.5.1 At what time was the friendly unit, element, individual, vehicle, etc., scheduled to reach its destination?

3.1.1.5.2 Did the friendly unit, element, individual reach its destination on schedule? How early? How late?

3.1.1.5.2.1 At what time did the first element reach its destination?

3.1.1.5.2.2 At what time did the last element reach its destination?

3.1.1.5.3 What was the commander's estimate of the time required for the movement?

3.1.1.6 How was each item of STANO equipment employed to assist in orientation or the use of navigation equipment during dismounted unit road marches?

3.1.1.6.1 What STANO equipment was available for use during the movement?

3.1.1.6.2 Was all the equipment employed during the movement?

3.1.1.6.3 Which items were not employed during the movement? Why? (J)

3.1.1.6.4 How was each item of STANO equipment carried employed during the movement? To see landmarks? To read maps? To see instruments? To detect obstacles? Other uses? Specify.

3.1.1.7 What was the average interval (meters) between individuals maintained in elements of the main body during dismounted tactical road marches?

3.1.1.7.1 What interval (meters) was maintained between individuals during movement? (J)

3.1.1.7.2 What interval (meters) was maintained between individuals and vehicles during the movement? (J)

3.1.1.8 What was the average interval (meters) maintained between elements of the main body during dismounted tactical road marches?

3.1.1.8.1 What interval (meters) was maintained between elements within the formation? (J)

3.1.1.9 What was the average distance (meters) at which forward, flank, and rear security elements operated during dismounted unit tactical road marches? (J)

3.1.1.9.1 At what distance (meters) did security elements operate in advance of the formation? (J)

3.1.1.9.2 At what distance (meters) did security elements operate on the left and right flanks of the formation? (J)

3.1.1.9.3 At what distance (meters) did security elements operate the rear of the formation? (J)

3.1.1.10 What was the average length and width (meters) of each type unit formation during dismounted tactical unit road marches? (J)

3.1.1.10.1 What was the depth (meters) of the formation (not including security elements)? (J)

3.1.1.10.2 What was the depth (meters) of the formation including security elements? (J)

3.1.1.10.3 What was the width (meters) of the formation (not including security elements)? (J)

3.1.1.10.4 What was the width (meters) of the formation including security elements? (J)

3.1.1.11 What was the average number of stragglers for dismounted tactical road marches?

3.1.1.11.1 Did all elements complete the movement?

3.1.1.11.1 What elements failed to complete the movement?

3.1.1.11.3 What was the reason for each element failing to complete the movement? (J)

3.1.1.11.4 What was the total number of stragglers observed for the movement?

3.1.1.12 How many dismounted unit cross-country movements were made in each type tactical formation?

3.1.1.12.1 What size unit made the move?

3.1.1.13 What was the average rate of movement (KPH) for dismounted cross-country unit marches in each type formation?

3.1.1.13.1 At what location did the movement start? (Map Coordinate)

3.1.1.13.2 At what location was the movement completed? (Map Coordinate)

3.1.1.13.3 What distance (kilometers) was covered during the movement?

3.1.1.13.4 At what time did the movement start?

3.1.1.13.4.1 If movement did not start on schedule, why not? (J)

3.1.1.13.4.2 At what time did the first element start?

3.1.1.13.4.3 At what time did the last element start?

3.1.1.13.5 At what time was the movement completed?

3.1.1.13.6 Did any delays occur enroute?

3.1.1.13.7 At what time did each delay occur?

3.1.1.13.8 What was the cause of each delay? (J)

3.1.1.13.9 At what time did movement resume after each delay?

3.1.1.14 What percentage of dismounted unit cross-country movements were detected by the aggressor? Why?

3.1.1.14.1 Was the movement detected by aggressor? What was detected? How was it detected?

3.1.1.14.2 At what location was the aggressor(s) who detected the movement? (Map Coordinates)

3.1.1.14.3 At what location was the friendly element at the time the movement was detected by the aggressor? (Map Coordinates)

3.1.1.14.4 At what range (meters) did the aggressor(s) detect the friendly element?

3.1.1.15 What percentage of each type unit dismounted cross-country tactical formation arrived on schedule? What was the variation between the commander's estimate and the actual arrival time for each formation?

3.1.1.15.1 At what time was the friendly element scheduled to reach its destination?

3.1.1.15.2 Did the friendly unit, element, individual reach its destination on schedule? How early? How late?

3.1.1.15.2.1 At what time did the first element reach its destination?

3.1.1.15.2.2 At what time did the last element reach its destination?

3.1.1.15.3 What was the commander's estimate of the time required for the movement? (J)

3.1.1.16 How was each item of STANO equipment used to assist in orientation or the use of navigation equipment during unit tactical cross-country foot movement?

3.1.1.16.1 What STANO equipment was available for use during the movement?

3.1.1.16.2 Was all the equipment employed during the movement?

3.1.1.16.3 Which items were not employed during the movement? Why? (J)

3.1.1.16.4 How was each item of STANO equipment carried employed during the movement? To see landmarks? To read maps? To see instruments? To detect obstacles? Other uses? Specify.

3.1.1.17 What interval (meters) was maintained between dismounted individuals during movement? (J)

3.1.1.18 What was the average distance (meters) between elements for each dismounted element of the main body during cross-country movement? (J)

3.1.1.18.1 What interval (meters) was maintained between elements within the formation? (J)

3.1.1.19 What was the average width and length (meters) of each dismounted unit formation during cross-country movement? (J)

3.1.1.19.1 At what distance (meters) did security elements operate in advance of the formation? (J)

3.1.1.19.2 At what distance (meters) did security elements operate on the left and right flanks of the formation? (J)

3.1.1.19.3 At what distance (meters) did security elements operate to the rear of the formation? (J)

3.1.1.19.4 What was the depth (meters) of the formation (not including security elements)? (J)

3.1.1.19.5 What was the depth (meters) of the formation including security elements? (J)

3.1.1.19.6 What was the width (meters) of the formation (not including security elements)? (J)

3.1.1.19.7 What was the width (meters) of the formation including security elements? (J)

3.1.1.20 What was the average number of stragglers in each unit formation employed during dismounted cross-country movement?

3.1.1.20.1 What elements, individuals, vehicles, etc., failed to complete the movement?

3.1.1.20.2 What elements, individuals, vehicles, etc., failed to complete the movement?

3.1.1.20.3 What was the reason for each element, individual, vehicle failing to complete the movement?

3.1.1.20.4 What was the total number of stragglers observed for the movement?

3.1.1.21 How many dismounted movements were made by patrols?

3.1.1.21.1 What size element made the move?

3.1.1.22 What was the average rate (KPH) of movement for dismounted patrols in each type formation?

3.1.1.22.1 At what location did the movement start? (Map Coordinates)

3.1.1.22.2 At what location was the movement completed? (Map Coordinates)

3.1.1.22.3 What distance (meters) was covered during the movement?

3.1.1.22.4 At what time did the movement start?

3.1.1.22.4.1 If movement did not start on schedule, why not?

3.1.1.22.4.2 At what time did the first element start?

3.1.1.22.4.3 At what time did the last element start?

3.1.1.22.5 At what time was the movement completed?

3.1.1.22.6 Did any delays occur enroute?

3.1.1.22.7 At what time did each delay occur?

3.1.1.22.8 What was the cause of each delay? (J)

3.1.1.22.9 At what time did movement resume after each delay?

3.1.1.23 What percentage of dismounted patrols were detected by the movement? (Map Coordinates)

3.1.1.23.1 Was the movement detected by the aggressor? What was detected? How was it detected?

3.1.1.23.2 At what location was the aggressor(s) who detected the movement? (Map Coordinates)

3.1.1.23.3 At what location was the friendly element or individual at the time the movement was discovered by the aggressor? (Map Coordinates)

3.1.1.23.4 At what range (meters) did the aggressor(s) detect the friendly element or individual?

3.1.1.24 What percentage of dismounted patrols in each type formation reached their assigned objectives and returned?

3.1.1.24.1 At what time was the friendly patrol scheduled to complete its mission?

3.1.1.24.1.1 At what time did the first element reach its destination?

3.1.1.24.1.2 At what time did the last element reach its destination?

3.1.1.24.2 Did the friendly patrol complete its mission on schedule?

3.1.1.25 How was each item of STANO employed to assist in orientation or the use of navigation equipment during dismounted patrol operations?

3.1.1.25.1 What STANO equipment was available for use during the movement?

3.1.1.25.2 Was all the equipment employed during the movement?

3.1.1.25.3 Which items were not employed during the movement? Why? (J)

3.1.1.25.4 How was each item of STANO equipment carried employed during the movement? To see landmarks? To read maps? To see instruments? To detect obstacles? Other uses? Specify.

3.1.1.26 What was the average interval between individuals in each type dismounted patrol formation?

3.1.1.26.1 What interval (meters) was maintained between dismounted individuals during movement? (J)

EEA 3.1.2 What effect does STANO equipment have on wheeled vehicle movements?

RATIONALE: The use of STANO equipment is expected to enable wheeled vehicles to increase their rate of movement at night. Formations and individual vehicles should be able to move faster, because the equipment provides a capability for the commander and individual driver to maintain orientation while moving and due to a better ability to see, overcome or bypass obstacles. In addition, the improved visibility provided by STANO equipment permits increased intervals between individual wheeled vehicles, and organizational elements with less chance of losing contact.

DATA REQUIREMENTS:

3.1.2.1 How many unit wheeled vehicle tactical road marches were made?

3.1.2.1.1 What size unit made the move?

3.1.2.2 What was the average rate of speed (KPH) for mounted unit tactical road marches conducted?

3.1.2.2.1 At what location did the movement start? (Map Coordinates)

3.1.2.2.2 At what location was the movement completed? (Map Coordinates)

3.1.2.2.3 What distance (kilometers) was covered during the movement?

3.1.2.2.4 At what time did the movement start?

3.1.2.2.4.1 If movement did not start on schedule, why not? (J)

3.1.2.2.4.2 At what time did the first element start?

3.1.2.2.4.3 At what time did the last element start?

3.1.2.2.5 At what time was the movement completed?

3.1.2.2.6 Did any delays occur enroute?

3.1.2.2.7 At what time did each delay occur?

3.1.2.2.8 What was the cause of each delay? (J)

3.1.2.2.9 At what time did the movement resume after each delay?

3.1.2.3 What percentage of mines and obstacles present were discovered during unit mounted tactical road marches under each level of illumination?

3.1.2.3.1 How many mines/obstacles were present at each site? (Aggressor Question)

3.1.2.3.2 How many mines/obstacles were discovered by friendly forces?

3.1.2.3.3 What type of enemy mine/obstacles were not discovered by friendly forces?

3.1.2.4 What percentage of unit mounted tactical road marches were detected by the aggressor?

3.1.2.4.1 Was the movement detected by aggressor? What was detected?

3.1.2.4.2 At what location was the aggressor(s) who detected the movement? What was detected? How was it detected? (Map Coordinates) (Aggressor Question)

3.1.2.4.3 At what location was the friendly element at the time the movement was discovered by the aggressor? (Map Coordinates)

3.1.2.4.4 At what reported range did the aggressor(s) detect the friendly element? (Map Coordinates) (Use answer to 3.1.2.4.2 and 3.1.2.4.3)

3.1.2.4.5 What was the aggressor estimate of the size of the friendly element?

3.1.2.5 What percentage of each type mounted unit road march arrived on schedule? What was the variation from the commander's estimate of the time required to complete each wheeled vehicle road march?

3.1.2.5.1 At what time was the friendly element scheduled to reach its destination?

3.1.2.5.2 Did the friendly element reach its destination on schedule? How early? How late?

3.1.2.5.2.1 At what time did the first element reach its destination?

3.1.2.5.2.2 At what time did the last element reach its destination?

3.1.2.5.3 What was the commander's estimate of the time required to complete the movement? (J)

3.1.2.6. How was each item of STANO equipment employed to assist in orientation or use of navigation equipment during mounted road marches?

3.1.2.6.1 What STANO equipment was available for use during the movement?

3.1.2.6.2 Was all the equipment employed during the movement?

3.1.2.6.3 Which items were not employed during the movement? Why? (J)

3.1.2.6.4 How was each item of STANO equipment carried employed during the movement? To see landmarks? To read maps? To see instruments? To detect obstacles? Other uses? Specify.

3.1.2.7 What was the average interval between wheeled vehicles maintained in elements of the main body during mounted tactical road marches?

3.1.2.7.1 What total interval (meters) was maintained between vehicles during the movement? (J)

3.1.2.7.2 How many vehicles in each main body element?

3.1.2.8 What was the average interval maintained between elements of the main body during mounted road marches?

3.1.2.8.1 What total interval (meters) was maintained between elements within the formation? (J)

3.1.2.8.2 How many elements comprised the main body?

3.1.2.9 What was the average length (meters) of the unit column during wheeled vehicle movement on roads?

3.1.2.9.1 What was the length (meters) of the formation including security elements? (J)

3.1.2.9.2 What was the length (meters) of the formation (not including security elements)?

3.1.2.10 What percentage of the wheeled vehicles in each unit road march failed to close on their destination for other than mechanical causes under each level of illumination? If not vehicular breakdown, what caused the failure to close? (J)

3.1.2.10.1 Did all elements, individuals, vehicles, etc., complete the movement?

3.1.2.10.2 What elements, individuals, vehicles, etc. failed to complete the movement?

3.1.2.10.3 What was the reason for each element, individual, vehicle, failing to complete the movements? (J)

3.1.2.11 How many individual wheeled vehicle movements were conducted on roads?

3.1.2.11.1 What type vehicle made the move?

3.1.2.12 What was the average rate of speed (KPH) for individual wheeled vehicles moving on roads?

3.1.2.12.1 At what location did each movement start? (Map Coordinates)

3.1.2.12.2 At what location was the movement completed? (Map Coordinates)

3.1.2.12.3 What distance (kilometers) was covered during the movement?

3.1.2.12.4 At what time did the movement start?

3.1.2.12.4.1 If movement did not start on schedule, why not? (J)

3.1.2.12.4.2 At what time did the first element start?

3.1.2.12.4.3 At what time did the last element start?

3.1.2.12.5 At what time was the movement completed?

3.1.2.12.6 Did any delays occur enroute?

3.1.2.12.7 At what time did each delay occur?

3.1.2.12.8 What was the cause of each delay? (J)

3.1.2.12.9 At what time did movement resume after each delay?

3.1.2.13 How many individual wheeled vehicle cross-country movements were made?

3.1.2.13.1 What type vehicle?

3.1.2.14 What was the average rate of speed (KPH) for individual wheeled vehicles moving cross-country?

3.1.2.14.1 At what location did the movement start? (Map Coordinates)

3.1.2.14.2 At what location was the movement completed? (Map Coordinates)

3.1.2.14.3 What distance (kilometers) was covered during the movement?

3.1.2.14.4 At what time did the movement start?

3.1.2.14.4.1 If movement did not start on schedule, why not? (J)

3.1.2.14.4.2 At what time did the first element start?

3.1.2.14.4.3 At what time did the last element start?

3.1.2.14.5 At what time was the movement completed?

3.1.2.14.6 Did any delays occur enroute?

3.1.2.14.7 At what time did each delay occur?

3.1.2.14.8 What was the cause of each delay? (J)

3.1.2.14.9 At what time did movement resume after each delay?

EEA 3.1.3 What effect does STANO equipment have on tracked vehicle movements?

RATIONALE: The use of STANO equipment is expected to enable tracked vehicles to increase their rate of movement at night. Large and small formations of tanks and APC should be able to move faster, because the equipment provides a capability for commanders and individual drivers to maintain orientation while moving due to a better ability to see and overcome or bypass obstacles. In addition, the improved visibility provided by STANO equipment permits increased intervals maintained between individual tracked vehicles and organizational elements can be increased with less chance of losing contact.

DATA REQUIREMENTS:

3.1.3.1 How many unit tracked vehicle road marches were made?

3.1.3.1.1 What size unit made the move?

3.1.3.2 What was the average rate of speed (KPH) for tracked vehicle road marches conducted?

3.1.3.2.1 At what location did the movement start? (Map Coordinates)

3.1.3.2.2 At what location was the movement completed? (Map Coordinates)

3.1.3.2.3 What distance (kilometers) was covered during the movement?

3.1.3.2.4 At what time did the movement start?

3.1.3.2.4.1 If movement did not start on schedule, why not?

3.1.3.2.4.2 At what time did the first element start?

3.1.3.2.4.3 At what time did the last element start?

3.1.3.2.5 At what time was the movement completed?

3.1.3.2.6 Did any delays occur enroute?

3.1.3.2.7 At what time did each delay occur?

3.1.3.2.8 What was the cause of each delay? (J)

3.1.3.2.9 At what time did movement resume after each delay?

3.1.3.3 What percentage of mines and obstacles present were discovered during tracked vehicle road marches under each level of illumination? (Aggressor Question)

3.1.3.3.1 How many mines/obstacles were present at each site encountered?

3.1.3.3.2 How many mines/obstacles at each site were discovered by friendly forces?

3.1.3.3.3. At what time did friendly forces cross undiscovered mines/obstacles? What type of enemy mines/obstacles were not discovered?

3.1.3.4 What percentage of unit tracked vehicle road marches were detected by the aggressor under each level? Why?

3.1.3.4.1 Was the movement detected by aggressor? What was detected? (Agressor Question)

3.1.3.4.2 At what location was the aggressor(s) who detected the movement? (Map Coordinates) What was detected? How was it detected?

3.1.3.4.3 At what location was the friendly unit, element, individual, vehicle, etc., located at the time the movement was discovered by the aggressor? (Map Coordinates)

3.1.3.4.4 At what reported range did the aggressor(s) detect the friendly, unit, element, individual, vehicle etc.? (Map Coordinates) (Use answer to 3.1.3.4.2 and 3.1.3.4.3)

3.1.3.5 What percentage of each type tracked vehicle road march arrived on schedule? What was the variation from the time required to complete each tracked vehicle road march?

3.1.3.5.1 At what time was the friendly unit, scheduled to reach its destination?

3.1.3.5.2 Did the friendly unit reach its destination on schedule? How early? How late?

3.1.3.5.2.1 At what time did the first element finish?

3.1.3.5.2.2 At what time did the last element finish?

3.1.3.5.3 What was the commander's estimate of the time required for the movement? (J)

3.1.3.6 How was each item of STANO equipment employed to assist in orientation or navigation equipment during tracked vehicle road marches?

3.1.3.6.1 What STANO equipment was available for use during the movement?

3.1.3.6.2 Was all the equipment employed during the movement?

3.1.3.6.3 Which items were not employed during the movement? Why? (J)

3.1.3.6.4 How was each item of STANO equipment carried employed during the movement? To see landmarks? To read maps? To see instruments? To detect obstacles? Others? Specify.

3.1.3.7 What was the average interval maintained between tracked vehicles in elements of the main body during tactical road marches?

3.1.3.7.1 What total interval (meters) was maintained between vehicles during the movement? (J)

3.1.3.7.2 How many tactical vehicles in the unit?

3.1.3.8 What was the length (meters) of each type unit formation during tracked vehicle movement on roads? (J)

3.1.3.9 What percentage of the tracked vehicles in each unit road march failed to close on their destination for other than mechanical causes? What caused the failure to close? (J)

3.1.3.9.1 Did all vehicles complete the movement?

3.1.3.9.2 What vehicles failed to complete the movement?

3.1.3.9.3 What was the reason for each vehicle failing to complete the movement? (J)

3.1.3.10 How many unit cross-country tracked vehicle movements were made?

3.1.3.10.1 What size unit made the move?

3.1.3.11 What was the average rate (KPH) of movement for tracked vehicle cross-country unit marches?

3.1.3.11.1 At what location did the movement start? (Map Coordinates)

3.1.3.11.2 At what location was the movement completed? (Map Coordinates)

3.1.3.11.3 What distance (kilometers) was covered during the movement?

3.1.3.11.4 At what time did the movement start?

3.1.3.11.4.1 If the movement did not start on schedule, why not?

3.1.3.11.4.2 At what time did the first element start?

3.1.3.11.4.3 At what time did the last element start?

3.1.3.11.5 At what time was the movement completed?

3.1.3.11.6 Did any delays occur enroute?

3.1.3.11.7 At what time did each delay occur?

3.1.3.11.8 What was the cause of each delay? (J)

3.1.3.11.9 At what time did movement resume after each delay?

3.1.3.12 What percentage of unit tracked vehicle cross-country movements were detected prematurely by the aggressor? Why?

3.1.3.12.1 Was the movement detected by aggressor? What was detected? How was it detected?

3.1.3.12.2 At what location was the aggressor(s) who discovered the movement? (Map Coordinates)

3.1.3.12.3 At what location was the friendly unit or element located at the time the movement was discovered by the aggressor? (Map Coordinates)

3.1.3.12.4 At what range (meters) did the aggressor(s) detect the friendly unit, element, individual, vehicle, etc.? (Use answers to 3.1.3.12.2 and 3.1.3.12.3)

3.1.3.13 What percentage of present simulated mines/obstacles across the route of march were discovered during unit tracked vehicle cross-country movements?

3.1.3.13.1 How many simulated mines/obstacles were present across the route of march at each site?

3.1.3.13.2 How many mines/obstacles were discovered by friendly forces?

3.1.3.13.3 At what time did friendly forces cross undiscovered mines/obstacles?

3.1.3.14 What percentage of each type unit tracked vehicle cross-country tactical formation arrived on schedule? What was the variation between the commander's estimate and the actual arrival time for each formation and each level of illumination? (J)

3.1.3.14.1 At what time was the friendly unit, scheduled to reach its destination?

3.1.3.14.2 Did the friendly unit, reach its destination on schedule? How early? How late?

3.1.3.14.2.1 At what time did the first element finish?

3.1.3.14.2.2 At what time did the last element finish?

3.1.3.14.3 What was the commander's estimate of the time required for the movement? (J)

3.1.3.15 How was each item of STANO equipment used to assist in navigation or orientation of equipment during unit tracked vehicle cross-country movements?

3.1.3.15.1 What STANO equipment was available for use during the movement?

3.1.3.15.2 Was all the equipment employed during the movement?

3.1.3.15.3 Which items were not employed during the movement? Why? (J)

3.1.3.15.4 How was each item of STANO equipment carried employed during the movement? To see landmarks? To read maps? To see instruments? To detect obstacles? Other? Specify.

3.1.3.16 What was the average interval (meters) between individual tracked vehicles in each type formation used during cross-country movements?

3.1.3.16.1 What formations were employed during the move?

3.1.3.16.2 What interval (meters) was maintained between vehicles during the movements? (Enumerate for each formation.)

3.1.3.16.3 How many times was each formation employed?

3.1.3.17 What percentage of the tracked vehicles in each unit cross-country movement failed to close on their destination for other than mechanical causes? What caused their failure to close?

3.1.3.17.1 Did all elements, and vehicles, complete the movement?

3.1.3.17.2 What elements or vehicles, etc. failed to complete the movement?

3.1.3.17.3 What was the reason for each element or vehicle failing to complete the movement?

3.1.3.18 How many movements were made by armored cavalry platoon in each type formation and under each level of illumination?

3.1.3.18.1 What unit made the move?

3.1.3.19 What was the average rate of movement (KPH) for each tracked vehicle formation under each level of illumination?

3.1.3.19.1 At what location did the movement start? (Map Coordinates)

3.1.3.19.2 At what location was the movement completed? (Map Coordinates)

3.1.3.19.3 What distance (kilometers) was covered during the movement?

3.1.3.19.4 At what time did the movement start?

3.1.3.19.4.1 If movement did not start on schedule, why not?

3.1.3.19.4.2 At what time did the first element start?

3.1.3.19.4.3 At what time did the last element start?

3.1.3.19.5 At what time was the movement completed?

3.1.3.19.6 Did any delays occur enroute?

3.1.3.19.7 At what time did each delay occur?

3.1.3.19.8 What was the cause of each delay? (J)

3.1.3.19.9 At what time did movement resume after each delay?

3.1.3.20 What percentage of tracked vehicles in each type platoon formation reached their assigned objectives and returned under each level of illumination?

3.1.3.20.1 At what time was the friendly platoon scheduled to reach its destination?

3.1.3.20.2 Did the friendly platoon reach its destination on schedule? How early? How late?

3.1.3.20.3 What was the commander's estimate of the time required for the movement? (J)

3.1.3.21 How was each item of STANO equipment employed to assist in navigation or orientation with the armored cavalry operating cross-country?

3.1.3.21.1 What STANO equipment was available for use during the movement?

3.1.3.21.2 Was all the equipment employed during the movement?

3.1.3.21.3 Which items were not employed during the movement? Why? (J)

3.1.3.21.4 How was each item of STANO equipment employed during the movement? To see landmarks? To read maps? To see instruments? To detect obstacles? Other? Specify.

3.1.3.22 What was the average interval (meters) between individual tracked vehicle in each type platoon formation employed?

3.1.3.22.1 What interval (meters) was maintained between vehicles during movements? (Enumerate for each formation employed.)

3.1.3.22.2 What formations were employed and how often was each employed?

3.1.3.23 What was the average length and width (meters) of the armored cavalry or tank platoon moving cross-country? (J)

3.1.3.23.1 What was the depth of the formation (not including security elements)?

3.1.3.23.2 What was the depth (meters) of the formation including security elements? (J)

3.1.3.23.3 What was the width (meters) of the formation (not including security elements)? (J)

3.1.3.23.4 What was the width (meters) of the formation including security elements?

EEA 3.1.4 What effect does STANO equipment have on the mobility of cross-reinforced dismounted infantry and armor elements during offensive type operations?

RATIONALE: The use of STANO equipment is expected to increase the rate of movement of the dismounted soldier and tracked vehicles operating together on offensive type operations at night. They should be able to move faster because the equipment provides a capability to maintain orientation while moving and a better ability to see and overcome or bypass obstacles. In addition, intervals maintained between dismounted individuals and mounted elements can be decreased with less chance of accident, due to improved visibility provided by STANO equipment.

DATA REQUIREMENTS:

3.1.4.1 How many offensive type cross-reinforced operations were conducted involving dismounted individuals and tracked vehicles?

3.1.4.1.1 What size units and unit elements made the move?

3.1.4.2 What was the average rate of speed (KPH) during offensive type operations involving dismounted individuals and tracked vehicles?

3.1.4.2.1 At what location did the movement start? (Map Coordinates)

3.1.4.2.2 At what location was the movement completed? (Map Coordinates)

3.1.4.2.3 What distance (kilometers) was covered during the movement?

3.1.4.2.4 At what time did the movement start? If delay, why?

3.1.4.2.4.1 At what time did first element start?

3.1.4.2.4.2 At what time did last element start?

3.1.4.2.5 At what time was the movement completed?

3.1.4.2.6 Did any delays occur enroute?

3.1.4.2.7 At what time did each delay occur?

3.1.4.2.8 What was the cause of each delay? (J)

3.1.4.2.9 At what time did movement resume after each delay?

SUBOBJECTIVE 3.2 To evaluate the impact of STANO equipment on air mobility.

NOTE: The airborne searchlight is the only item of STANO equipment developed to illuminate a landing zone for landing troops or equipment.

RATIONALE: The airborne searchlight is designed to aid aviation elements in locating and analyzing landing zones and in the rate of delivery of personnel and equipment. This subobjective is directed toward obtaining information with which to evaluate this increased capability.

NOTE: Pilot debriefings are required at the end of each mission. It is highly improbable that any one pilot in the test will operate more than one STANO system installed in an aircraft; therefore, some questions in this subobjective must be evaluated through analysis.

SUPPORTING INFORMATION:

EEA 3.2.1 What effect does the airborne searchlight have on air navigation?

EEA 3.2.2 Did the airborne searchlight assist or improve in locating and checking the suitability of a prescribed landing zone/pickup zone?

EEA 3.2.3 What change occurred in the rate of delivery of personnel and equipment when aviation units were equipped with the airborne searchlight?

EEA 3.2.4 What impact did use of the airborne searchlight have on the pathfinder teams operating in a landing zone?

EEA 3.2.5 How was the airborne searchlight employed?

EEA 3.2.1 What effect does the airborne searchlight have on air navigation?

RATIONALE: It is expected that the airborne searchlight will improve the capability of aerial navigation at night.

DATA REQUIREMENTS:

3.2.1.1 Was navigation at night accomplished with the use of the airborne searchlight?

3.2.1.1.1 How many times was navigation at night accomplished solely with the use of the airborne searchlight?

3.2.1.1.2 What ground navigational aids were required on this mission?

3.2.1.1.3 In addition to the airborne searchlight, what air traffic control procedures and/or equipment were required on this mission? (Pathfinder teams with equipment or other ground control personnel)

3.2.1.2 Was navigation for the mission accomplished more rapidly with the use of the airborne searchlight?

3.2.1.2.1 At what time did this mission begin?

3.2.1.2.2 At what time did this mission terminate?

3.2.1.3 What was the average altitude at which the searchlight was most effective in air navigation at night?

3.2.1.3.1 What was the minimum altitude the searchlight proved effective on this mission?

3.2.1.3.2 What was the maximum altitude the searchlight proved effective on this mission?

3.2.1.4 Were obstacles identified with the use of the airborne searchlight?

3.2.1.4.1 What type of obstacles were identified through the use of the airborne searchlight? (Such as trees, towers, powerlines, etc.)

3.2.1.4.2 At what range were the obstacles identified?

3.2.1.4.3 At what altitude were the obstacles identified?

3.2.1.4.4 What was the air speed of the aircraft at the time of obstacle identification?

EEA 3.2.2 Did the airborne searchlight assist or improve in locating and checking the suitability of a prescribed landing zone/pickup zone?

RATIONALE: Daylight reconnaissance and ground inspection of landing zones/pickup zones is normally required. Minimum on-site inspection is desirable. It is expected that the airborne searchlight will assist in selecting and locating suitable night landing zones/pickup zones.

DATA REQUIREMENTS:

3.2.2.1 Were landing zones/pickup zones located through the use of the airborne searchlight?

3.2.2.1.1 How many times were landing zones/pickup zones located solely through the use of the airborne searchlight?

3.2.2.1.2 What procedures were used in locating landing zones/pick-up zones on this mission?

NOTE: Described in pilot debriefing.

3.2.2.2 What was the average time necessary to locate landing zone/pickup zone through the use of the airborne searchlight?

3.2.2.2.1 At what time did search for the landing zone/pickup zone begin on this mission?

3.2.2.2.2 At what time was landing zone/pickup zone located on this mission?

3.2.2.2.3 At what time did aircraft land on the zone on this mission?

3.2.2.3 Was the suitability of the landing zone/pickup zone ever determined by the use of the airborne searchlight?

3.2.2.3.1 How many times was the suitability of the landing zone/pickup zone determined by the use of the airborne searchlight?

3.2.2.3.2 What obstacles (trees, towers, powerlines, etc.) were detected and identified through the use of the airborne searchlight?

3.2.2.3.3 Was the height of the obstacles determined on this mission?

3.2.2.3.4 What was the size of the landing zone?

3.2.2.3.5 Was the slope of the landing zone/pickup zone determined through the use of the airborne searchlight on this mission?

3.2.2.3.6 Were the surface condition of the landing zone/pickup zone determined through the use of the airborne searchlight on this mission? (Dusty, foggy, etc.)

3.2.2.3.7 Was the distance of the landing zone/pickup zone from the enemy position determined by the use of the airborne searchlight?

3.2.2.3.7.1 Was the enemy position determined?

3.2.2.3.8 Were approach and departure routes to the landing zone/pickup zone determined by the use of the airborne searchlight?

3.2.2.3.9 Were landing zone/pickup zone determinations made with out benefit of daylight reconnaissance?

3.2.2.3.10 What altitudes were flown to make all above determinations?

3.2.2.3.11 If competing STANO devices were on board, did equipment interference occur?

EEA 3.2.3 What change occurred in the rate of delivery of personnel and equipment when aviation units were equipped with the airborne searchlight?

3.2.3.1 What was the average time for personnel loading at the pickup zone under limited visibility conditions using the airborne searchlight?

3.2.3.1.1 At what time did personnel loading begin?

3.2.3.1.2 At what time was personnel loading completed?

3.2.3.1.3 How many personnel were loaded?

3.2.3.1.4 How many aircraft were loaded?

3.2.3.1.5 What control measures were used to insure correct loading?

3.2.3.1.6 Did the aircraft depart the pickup zone under limited visibility conditions through the use of the airborne searchlight?

3.2.3.2 What was the average time for personnel unloading in the landing zone under limited visibility conditions through use of the airborne searchlight?

3.2.3.2.1 At what time did personnel unloading begin?

3.2.3.2.2 At what time was personnel unloading completed?

3.2.3.2.3 How many personnel were unloaded?

3.2.3.2.4 How many aircraft were unloaded?

3.2.3.2.5 What control measures were used to insure correct unloading?

3.2.3.2.6 Did the aircraft depart the landing zone under limited visibility conditions through the use of the airborne searchlight?

3.2.3.3 What was the average time of equipment delivery to landing zones under limited visibility conditions through the use of the airborne searchlight?

3.2.3.3.1 At what time did equipment loading begin?

3.2.3.3.2 At what time was equipment unloading completed?

3.2.3.3.3 Was equipment internally loaded?

3.2.3.3.4 Was the equipment sling loaded?

3.2.3.3.5 Was equipment both internally and sling loaded?

3.2.3.3.6 What type of equipment or supplies were transported?

3.2.3.3.7 Who unloaded the aircraft (aircrew, pathfinders, ground personnel, etc.)?

3.2.3.3.8 What time did the aircraft depart the landing zone?

3.2.3.4 Were personnel and/or equipment picked up on a forward area pickup zone?

NOTE: Use questions 3.2.3.1, 3.2.3.2 and 3.2.3.3.

3.2.3.5 Did installation ofthe airborne searchlight in the troop carrier aircraft reduce range or load capacity?

3.2.3.5.1 Was fuel capacity (pounds) of aircraft reduced?

3.2.3.5.1.1 What was the percentage of reduction?

3.2.3.5.2 Was load capacity (pounds) of aircraft reduced?

3.2.3.5.2.1 What was the percentage of reductions?

EEA 3.2.4 What impact did use of the airborne searchlight have on pathfinder teams operating in a landing zone?

3.2.4.1 Was the airborne searchlight used to illuminate the landing area for deployment of the pathfinder team?

3.2.4.1.1 What time was area illuminated?

3.2.4.1.2 What time did illumination cease?

3.2.4.2 Was pathfinder team subjected to exposure during aircraft landing operations through use of the airborne searchlight?

3.2.4.2.1 How long was team exposed to white light?

3.2.4.2.2 How long was team exposed to infrared light?

3.2.4.2.3 Did use of the airborne searchlight affect the night vision of the pathfinder team?

3.2.4.3 What changes in pathfinder techniques occurred as a result of employment of the airborne searchlight?

3.2.4.4 Could pathfinder personnel and equipment be detected and identified during operation of the airborne searchlight by either friendly or enemy forces?

EEA 3.2.5 How was the airborne searchlight employed?

3.2.5.1 Did use of the airborne searchlight in landing zone operations dictate a greater distance from the objective area to avoid compromise of the operation?

3.2.5.2 How was the airborne searchlight employed in the objective area? (Rectangular, circular flight path, etc.)

3.2.5.2.1 Were both modes used during landing zone operations? (Example: Infrared mode until predetermined time and then white light mode.)

3.2.5.2.2 What was length of time between change of modes before searchlight was again effective?

3.2.5.2.3 What was the optimum effective altitude for both modes?

3.2.5.2.4 Was landing zone information received from the pathfinder team on the ground?

3.2.5.2.5 Who determined length of time searchlight was in white light mode? (Mission commander, air crew, pathfinder team, etc.)

3.2.5.3 Was there difficulty in relating target information from the observer to the pilot during infrared mode operation?

3.2.5.4 Was the night vision of the air crew affected during white light mode operations?

3.2.5.5 What type of activity could be observed during searchlight operations in both modes? (Vehicular, single stationary, personnel, moving personnel, etc.)

3.2.5.6 Was operation of searchlight in either mode detected by aggressor forces?

SUBOBJECTIVE 3.3 To determine the effect of interactions of STANO equipment with other STANO equipment relative to mobility.

RATIONALE: Certain STANO equipment may interfere with, degrade the performance of, or prevent the use of other STANO items. This may result from over-illumination, from electronic interference, or from other causes. Some items of STANO equipment may augment or improve the performance of another STANO item, when they are used in the same equipment mix. Some STANO items are directly in competition in regard to the type and quality of information they produce. Data must be obtained to identify equipment interactions in order to maximize effectiveness of equipment mixes.

SUPPORTING INFORMATION:

EEA 3.3.1 Does any item of STANO equipment in the equipment mixes tested interfere with, degrade the performance of, or prevent the use of any other STANO item relative to mobility?

EEA 3.3.2 Does any combination of STANO equipment tested in the different equipment mixes significantly improve the performance of another item of STANO equipment relative to mobility?

EEA 3.3.3 Do two or more items perform essentially the same functions and produce the same type and quality of information relative to mobility?

EEA 3.3.1 Does any item of STANO equipment in the equipment mixes tested interfere with, degrade the performance of, or prevent the use of any other STANO item relative to mobility?

RATIONALE: It is probable, due to the complexity and sensitivity of items employed for STANO, that one item may interfere with, degrade or prevent the use of other STANO items. This may be due to over-illumination, electronic interference, or other reasons. Tests should be designed to identify all equipment combinations which are not compatible.

DATA REQUIREMENTS:

3.3.1.1 What items of STANO equipment degrade the performance of any other items of STANO equipment?

3.3.1.3 What items of STANO equipment prevented the use of any other items of STANO equipment?

3.3.1.3 Were any measures or field expedients developed to overcome any such adverse interference? (J)

3.3.1.4 What was the duration of the interference?

3.3.1.5 What were the causes of the interference? (J)

3.3.1.6 What was the extent of the degradation? (J)

NOTE: Indicate on the matrix shown below the items of STANO equipment which interfere by degrading or preventing the use of any other STANO items relative to mobility. Use D for degradation and P for preventing the use. If interference is temporary, indicate its duration in minutes after P or D. If such factors as distance between items or levels of light intensity are the controlling factors indicate in the remarks section. Indicate in the remarks section measures or field expedients developed to overcome adverse interference.

Cause of Interference	Affected by Interference																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-15

EEA 3.3.2 Does any combination of STANO equipment tested in the different equipment mixes significantly improve the performance of another item of STANO equipment relative to mobility?

RATIONALE: It is probable that certain items of equipment, used in combination, will improve the performance of one or more items of equipment. This may consist of extensions of its effective range of operation, its accuracy in target acquisition and identification, reduction in false alarms, or other similar performance improvement. This EEA is designed to identify all combinations of STANO equipment items which complement item performance.

DATA REQUIREMENTS:

3.3.2.1 Did any combinations of STANO equipment result in improved performance for one of the items?

3.3.2.2 What was the duration (in minutes) of this improvement?

3.3.2.3 What was the extent ofthis improvement? (Give specific details) (J)

NOTE: Indicate in the matrix shown below the items of STANO equipment which improved the performance of other STANO items relative to mobility. Enter R for improvement in range followed by the numerical increase in meters, e.g., R 100. Enter C for clarity of image or transmission. Enter any other improvement discovered by using the remarks section.

Cause of Improvement	Affected by Improvement																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-16

EEA 3.3.3 **Do two or more items perform essentially the** same functions and produce the same type and quality of information relative to mobility?

RATIONALE: It is probable that within the STANO family of equipment there are items that have duplicate capabilities and produce essentially the same information, although the engineering design principles for each may be entirely different. This is desirable during the developmental and test stage, but the field tests should be tailored to identify and such duplication and to produce information on the relative merits of each item in such areas as reliability, maintainability, ease of operation, and other similar factors that can serve as a basis for decisions on which items should be selected for standardization and inventory procurement.

DATA REQUIREMENTS:

3.3.3.1 Were there any STANO items which produced duplicate information relative to mobility?

3.3.3.2 Whenever two items or more perform the same function which one was more reliable? (J)

3.3.3.3 Whenever two items or more perform the same function which one was easier to maintain? (J)

3.3.3.4 Whenever two items or more perform the same function which one was easier to operate? (J)

3.3.3.5 Did the item have other characteristics such as weight, transportability, etc., which made it more desirable? Provide specific details and when possible quantify the information. (J)

NOTE: This data requirement can and should be derived from a set of objective data form matrix.

NOTE: Indicate on the matrix shown below the items of STANO equipment which duplicate the performance of other STANO items relative to mobility. Enter S for items which perform the same or a very similar function, in the square corresponding to the two items. Explain in the remark paragraph the item recommended for retention and the reasons in such areas as reliability, light-weight, ease of operation and maintenance. If possible, quantify the information.

Cause of Duplication	Affected by Duplication																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-17

SUBOBJECTIVE 3.4 To determine the effect of interactions of STANO equipment with other standard items of equipment relative to mobility.

RATIONALE: Employment of STANO equipment may prevent, degrade or enhance the use of standard items of equipment. Conversely, standard items of equipment may prevent, degrade or enhance the use of STANO equipment. This may be caused by over-illumination, electronic interference, vibration or other reasons. It is necessary to determine and measure the factors which control the interference or enhancement, e.g., distance between items or levels of intensity involved.

SUPPORTING INFORMATION:

EEA 3.4.1 Does any item of STANO equipment under test, interfere with, degrade the performance of, or prevent the use of any standard items and conversely, do standard items interfere with, degrade the performance of, or prevent the use of, any item of STANO equipment tested relative to mobility?

EEA 3.4.2 Does employment of any STANO equipment significantly improve the performance of a standard item of equipment and conversely, does any standard item significantly improve the performance of a STANO item relative to mobility?

EEA 3.4.1 Does any item of STANO equipment under test interfere with, degrade the performance of, or prevent the use of any standard items and conversely; do standard items interfere with, degrade the performance of, or prevent the use of, any item of STANO equipment tested relative to mobility?

RATIONALE: It is possible, due to the complexity and sensitivity of items employed for STANO, that one item may interfere with, degrade, or prevent the use of standard items. Conversely, standard items of equipment may prevent, degrade or enhance the use of STANO equipment. This may be due to electronic interference, overloading, or other reasons. Tests should be designed to identify all equipment combinations which are not compatible.

DATA REQUIREMENTS:

3.4.1.1 Did any item of STANO equipment interfere with, degrade the performance of, or prevent the use of any standard item of equipment? If so, identify the item(s) and describe the cause and extent of interference. (J)

3.4.1.2 Did any item of standard equipment interfere with, degrade the performance of, or prevent the use of any STANO item of equipment? If so, identify the items and describe the cause and extent of interference. (J)

3.4.1.3 Were any measures or field expedients developed to overcome any such adverse interference? Describe. (J)

NOTE: It may be possible to collect information for answering all the above questions on one data form using the matrix shown below. Use D for degradation and P for preventing the use. If interference is temporary, indicate its duration in minutes after P or D. If such factors as distance between items or levels of light intensity are the controlling factors indicate in the remarks section. Indicate in the remarks section measures or field expedients developed to overcome adverse interference.

Cause of Interference \ Affected by Interference	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-18

EEA 3.4.2 Does employment of any STANO equipment significantly improve the performance of a standard item of equipment and conversely, does any standard item significantly improve the performance of a STANO item relative to mobility?

RATIONALE: It is possible that certain STANO items of equipment used in combination, will improve the performance of one or more standard items of equipment. Conversely, standard items of equipment may significantly improve the performance of a STANO item. This may consist of extension of effective range of operation, improvement of accuracy, reduction in false alarms, or other similar performance improvement. Tests should be designed to identify all equipment combinations which are compatible.

DATA REQUIREMENTS:

3.4.2.1 Did any combination of STANO equipment result in improved performance of any standard item? Give specific details on each such combination and the type and extent of improvement achieved. State the conditions such as distance between items, levels of ambient light, etc. which control the enhancement. (J)

3.4.2.2 Did any item of standard equipment improve the performance of any STANO item of equipment? If so, identify the items and describe the improvement. (J)

3.4.2.3 Were any measures or field expedients developed to continue the improved condition? (J)

3.4.2.4 Was the improvement of a temporary nature? If so, what was the duration of the improvement? (J)

NOTE: It may be possible to collect information for answering all the above questions on one data form using the matrix shown below. If durations are temporary indicate the duration in minutes using the letter T, e.g. T15. Enter R for improvement in range followed by the numerical increase in meters, e.g. R100. Enter C for clarity of image or transmission. Enter any other improvement discovered by using the remarks section.

Affected by Improvement / Cause of Improvement	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-19

SUBOBJECTIVE 3.5 To provide an evaluation of human factors engineering requirements for the operation of STANO equipment.

RATIONALE: How well the individual is able to function using the STANO equipment depends on its ease of transport, the facility of its operation and the extent to which it aids movement at night under various conditions.

SUPPORTING INFORMATION:

EEA 3.5.1 Did the size and weight of the equipment influence the perofrmance of the personnel utilizing the equipment?

EEA 3.5.2 Was the equipment awkward to operate or handle due to its shape?

EEA 3.5.1 Did the size and weight of the equipment influence the performance of the personnel utilizing the equipment?

RATIONALE: Although the equipment may achieve the desired military operational standards in terms of mission success, it may have serious problems relative to its size and weight which inhibit its utility.

DATA REQUIREMENTS:

3.5.1.1 Did the size of the equipment item have a detrimental effect on the operator's or unit's performance of their mission?

3.5.1.1.1 For which equipment did size influence the ways in which the operator used the equipment? (J)

3.5.1.1.2 What transport problems did equipment size cause for operator personnel by item of equipment? (J)

3.5.1.1.3 What detrimental effect did equipment size have on the performance of the unit's mission by item of equipment?

3.5.1.2 Did the weight of the equipment item have a detrimental effect on the operator's or unit's mission performance?

3.5.1.2.1 For which items did excessive weight change the way the operator used the equipment?

3.5.1.2.2 What were the transport problems due to weight? By device?

3.5.1.2.3 What were the detrimental effects of excessive weight on operator performance?

EEA 3.5.2 Was the equipment awkward to operate or to handle due to its shape?

RATIONALE: Although the equipment may achieve the desired standards in terms of mission success, and the size and weight of the equipment may be acceptable; its shape or its protruding elements may create trouble and problems for the operators.

DATA REQUIREMENTS:

3.5.2.1 Did the shape of the equipment item have a detrimental effect on the operator's or unit's performance of their mission?

3.5.2.1.1 With which equipment did shape influence the ways in which the operator used the equipment?

3.5.2.1.2 What was the detrimental effect of equipment shape on the unit's mission?

3.5.2.1.3 Were any parts to the device lost?

3.5.2.1.4 Did any knobs or other parts of the device fall off?

3.5.2.2 Did the equipment present problems due to its shape during transport?

3.5.2.2.1 What were the transportation problems due to shape? By device?

3.5.2.2.2 Could the device be carried while running?

3.5.2.2.3 Could the device be carried through heavy brush?

3.5.2.2.4 Could the device be carried while crawling?

3.5.2.2.5 Was the device dropped during operations?

3.5.2.2.6 Was the device struck against a solid object during operations?

3.5.2.2.7 Was the device struck by a solid object during operations?

3.5.2.2.8 Did protruding parts of the device tend to catch on clothing, other equipment, brush or anything else? What parts?

3.5.2.2.9 What was distance in meters equipment was carried?

3.5.2.2.10 How many men were needed to transport STANO equipment, by name of equipment, when more than one man was required?

3.5.2.2.11 Did porters have to be changed during extended transport of equipment?

3.5.2.2.12 Are there more porters than there are operators or assistants?

3.5.2.2.13 What was average equipment carrying time?

3.5.2.2.13.1 When did equipment carriers leave assembly area?

3.5.2.2.13.2 When did equipment carriers arrive?

DISTRIBUTION: Same as basic plan

OBJECTIVE 4

1. PURPOSE: This appendix outlines the subobjectives and EEA pertaining to test objective 4.

2. OBJECTIVE 4: To determine the impact on command, control, and communications resulting from the employment of STANO equipment.

RATIONALE: The use of STANO equipment may affect command, control, and communications. The degree of change may vary among the three functions. There will be both direct and indirect effects on command, control and communications depending upon the variety and number of STANO equipment items being used in the situation.

3. SUPPORTING INFORMATION:

SUBOBJECTIVE 4.1 To evaluate the impact of STANO equipment on command and control functions.

SUBOBJECTIVE 4.2 To evaluate the use of STANO equipment for communications.

SUBOBJECTIVE 4.3 To evaluate the impact of the employment of STANO equipment on communications facilities.

SUBOBJECTIVE 4.4 To determine the effect of interactions of STANO equipment with other STANO equipment items relative to command, control and communications.

SUBOBJECTIVE 4.5 To determine the effect of interactions of STANO equipment with other items of equipment relative to command, control, and communications.

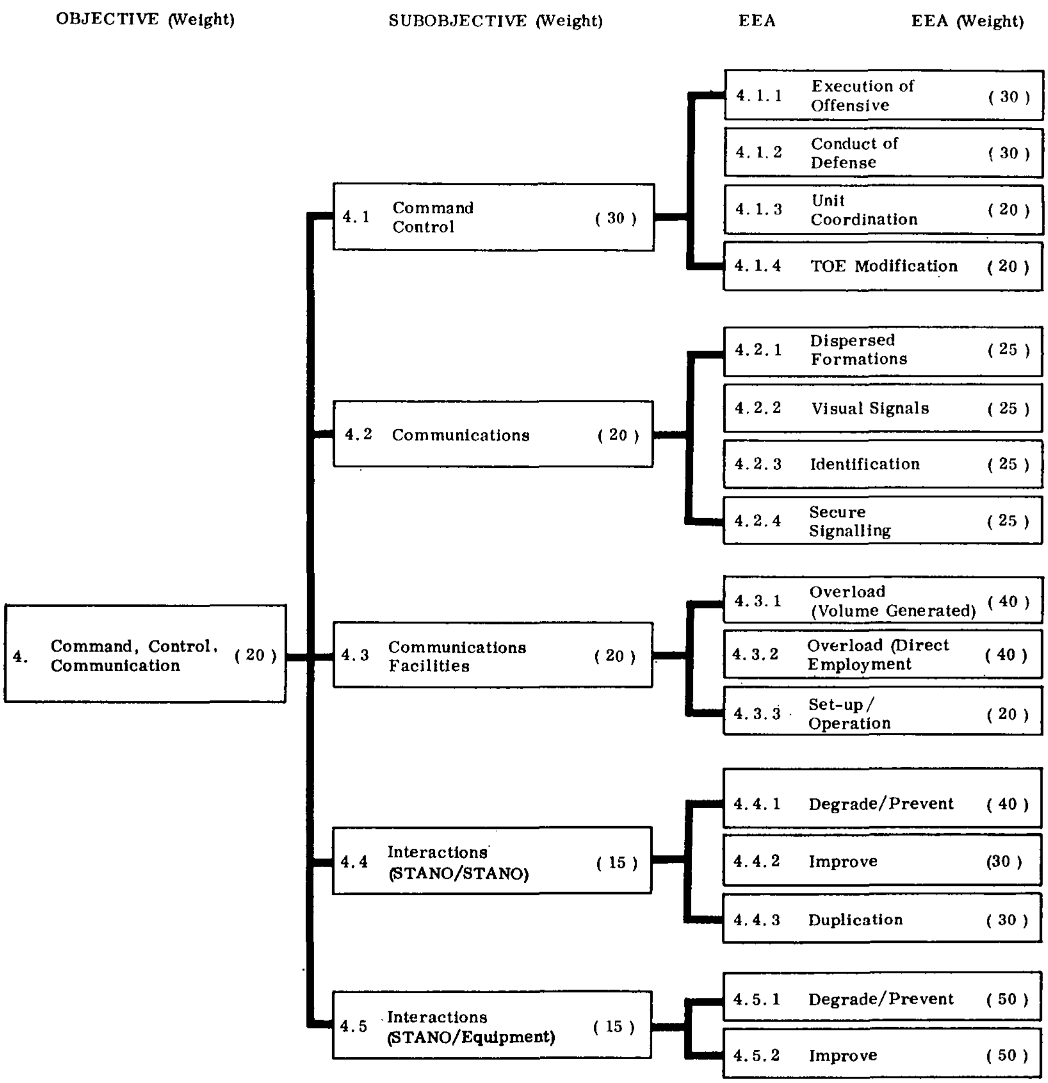

Figure 4-20. Logic Diagram - Objective 4

SUBOBJECTIVE 4.1 To evaluate the impact of STANO equipment on command and control functions.

RATIONALE: It is expected that the employment of STANO equipment will facilitate command by providing greater flexibility in planning and execution of night operations, especially for small units. Also, the use of these devices may make preparation of plans and orders more complicated. The approach of this subobjective is to observe and measure the flexibility of command in terms of greater effectiveness in execution and the complexity of planning in terms of time, errors, and complexity. Advantages of flexibility versus disadvantages of complexity will be considered in comparing the results of the trial runs with the results of the control runs.

SUPPORTING INFORMATION:

EEA 4.1.1 Did the use of STANO equipment enhance the capabilities of commanders in planning and execution of offensive operations during periods of limited visibility?

EEA 4.1.2 Did the use of STANO equipment enhance the capabilities of commanders during the organization of the ground and conduct of the defense during periods of limited visibility?

EEA 4.1.3 Did the use of STANO equipment impose additional requirements for commanders to coordinate their use with higher, lower and adjacent units?

EEA 4.1.4 Were modifications to the tactical organizations required as a result of the introduction of STANO equipment?

EEA 4.1.1 Did the use of selected STANO equipment enhance the capabilities of commanders for planning and execution of offensive operations during periods of limited visibility?

RATIONALE: It is expected that STANO equipment will assist commanders in the planning and execution of night offensive operations.

4.1.1.1 Did the use of STANO equipment facilitate command and control functions during the planning and execution of offensive operations?

4.1.1.1.1 Did the unit leaders conduct a ground reconnaissance prior to the offensive operation?

4.1.1.1.1.1 Was STANO equipment used during this reconnaissance?

4.1.1.1.1.2 Were positions for supporting weapons reconnoitered, marked and was firing data prepared during daylight hours prior to the offensive operation?

4.1.1.1.2 Was STANO equipment used to locate the aggressor prior to commencing the operation?

4.1.1.1.3 Was the direction of attack established along recognizable terrain features?

4.1.1.1.4 Was the general direction of attack established by assigning an azimuth to be followed?

4.1.1.1.5 Was the selection of objective release points, line of deployment, final coordination line and limit of advance simplified by knowing that troops would be equipped with night equipment?

4.1.1.2 What controls were employed to maintain unit integrity and to establish movement rate and direction?

4.1.1.2.1 Was probable line of deployment identified correctly by subordinate elements during the offensive operation?

4.1.1.2.2 Was limit of advance identified correctly by subordinate elements during the offensive operation?

4.1.1.3 What percentage of the time was the integrity of the unit and subelements not maintained during the attack after it crossed the line of departure?

4.1.1.3.1 Was unit forced to reorganize during the attack?

4.1.1.3.1.1 Did reorganization of the element occur before the unit reached the squad release point?

4.1.1.3.1.2 Did reorganization of the element occur before the unit reached the final coordination line?

4.1.1.3.2 What element became disoriented? Why?

4.1.1.3.3 How many individuals or units lost their way during the offensive operation?

4.1.1.3.4 Was night equipment used to assist in finding them?

4.1.1.4 Were the units able to maintain assigned time schedules during the conduct of offensive?

4.1.1.4.1 At what time was the formation ordered forward?

4.1.1.4.2 At what time was the unit scheduled to cross the point of departure?

4.1.1.4.3 At what time did the unit cross point of departure?

4.1.1.4.4 Did the unit halt in the attack position?

4.1.1.4.4.1 What are reasons for halts in the attack position?

4.1.1.4.5 At what time was the unit scheduled to reach the release point?

4.1.1.4.5.1 At what time did the unit reach the unit release point?

4.1.1.4.6 At what time was the unit scheduled to reach the final coordination line?

4.1.1.4.7 At what time did the unit reach the final coordination line?

4.1.1.4.8 At what time was the unit scheduled to reach the probable line of deployment?

4.1.1.4.9 At what time did the unit reach the probable line of deployment?

4.1.1.4.10 At what time was the unit scheduled to arrive at the objective?

4.1.1.4.11 At what time did the element arrive at its objective?

4.1.1.5 Was the security element equipped with STANO equipment and sent out to provide early warning of possible enemy counter attack?

4.1.1.6 What was the opinion of the commander regarding the employment of STANO equipment as it pertains to command and control during offensive operations? (J)

EEA 4.1.2 Did the use of selected night equipment enhance the capabilities of commanders during the organization of the ground and conduct of the defense during periods of limited visibility?

RATIONALE: It is believed that STANO equipment will assist the commanders in the organization of the ground and conduct of night defense.

4.1.2.1 How much did the use of STANO equipment facilitate command and control functions during the organization of the ground and conduct of the defense?

4.1.2.1.1 What type of defensive position was established? Check one: Company perimeter? Battalion base camp? Signal defensive position? Platoon perimeter? Other?

4.1.2.1.2 Did the use of STANO equipment speed organization of defensive position?

4.1.2.1.2.1 What time did they begin?

4.1.2.1.2.2 What time did they finish organization of the defense?

4.1.2.1.2.3 Was the STANO equipment reallocated for defensive use?

4.1.2.1.2.4 Was active illumination planned for use or on stand-by basis for the defensive operation?

4.1.2.1.2.5 Were positions for supporting weapons reconnoitered, marked and firing data prepared during daylight hours prior to the conduct of the defense?

4.1.2.2 Was the unit able to defend on a wider frontage?

4.1.2.2.1 Were the troops able to move quietly in these formations?

4.1.2.2.2 Were the troops able to maintain the required rate of movement?

4.1.2.3 Did the use of STANO equipment facilitate the shifting of forces to meet the threat during the conduct of the defense?

4.1.2.3.1 How many times did the use of STANO equipment facilitate the shifting of forces to meet the threat during the conduct of the defense?

4.1.2.4 Did the use of STANO equipment facilitate the displacement of supporting or alternate positions during the conduct of the defense?

4.1.2.4.1. How many times did the use of STANO equipment facilitate the displacement of supporting weapons to supplementary or alternate positions during the conduct of the defense?

4.1.2.5 What was the opinion of the commander regarding the employment of STANO equipment as it pertains to command and control during defensive operations? (J)

EEA 4.1.3 Did the use of selected STANO equipment impose additional requirements for commanders to coordinate their use with higher, lower and adjacent units?

RATIONALE: It is expected that selected STANO equipment will impose additional requirements on commanders in coordinating their use with higher, lower and adjacent units, but that greater flexibility and effectiveness will result through the use of the equipment.

4.1.3.1 In what percent of all operations was prior coordination of equipment required with adjacent units?

4.1.3.1.1 Was prior coordination required due to the equipment?

4.1.3.1.2 Is close coordination required because of possible danger to personnel involved in the field test?

EEA 4.1.4 Were modifications to the tested organizations required as a result of the introduction of STANO equipment?

RATIONALE: It is presumed that modifications to applicable TOE will be required as a result of the introduction of STANO equipment.

DATA REQUIREMENTS:

4.1.4.1 What and how many modifications in personnel are required to the applicable TOE?

4.1.4.1.1 What items of STANO equipment were provided to the unit?

4.1.4.1.2 In what type of operation was the unit involved?

4.1.4.1.3 Were the operators of the STANO equipment properly allocated?

4.1.4.1.4 Were too few operator personnel assigned?

4.1.4.1.5 How many additional personnel were required to operate the devices or to perform functions related to the devices?

4.1.4.2 What and how many modifications in equipment TOE were provided to the unit?

4.1.4.2.1 What items of STANO equipment were provided to the unit?

4.1.4.2.2 In what type of operation was the unit involved?

4.1.4.2.3 How many times did the issue of STANO equipment require additional standard equipment such as vehicles, tentage, etc.?

SUBOBJECTIVE 4.2 To evaluate the use of STANO equipment for communications.

RATIONALE: Because it offers an improved ability to see at night, STANO equipment will facilitate visual communication. The improved ability to see will allow for more dispersed formations, improved individual navigation, and improved control and coordination. Certain STANO devices will be used for signalling in a manner that will be more covert than current signalling devices.

SUPPORTING INFORMATION:

EEA 4.2.1 Did the use of STANO equipment allow for more dispersed formations?

EEA 4.2.2 Did the use of STANO equipment allow use of visual signals during periods of darkness?

EEA 4.2.3 Did the use of STANO equipment improve identification as friend or foe?

EEA 4.2.4 Did the use of STANO equipment provide more secure signalling?

EEA 4.2.1 Did the use of STANO equipment allow for more dispersed formations?

RATIONALE: It is expected that the use of STANO equipment will allow the troops to deploy in more dispersed formations without reducing their rate of movement because:

a. Troops will be able to see each other at longer distances.

b. Commanders will be able to control their troops even in dispersed formations.

c. Troops can move more quietly when they can see.

DATA REQUIREMENTS:

4.2.1.1 Did the ability to see at longer distances using STANO equipment allow the use of formations similar to those dispersed formations used during the daylight hours?

4.2.1.1.1 What was the distance (meters) between left flank and right flank of units?

4.2.1.1.2 How far out (meters) were the outposts?

4.2.1.2 Were the commanders able to control their troops in the dispersed formations?

4.2.1.2.1 Were the troops able to move quietly in these formations?

4.2.1.2.2 Were the troops able to maintain the required rate of movement?

4.2.1.2.2.1 What amount of time was scheduled for the maneuver?

4.2.1.2.2.2 At what time did the advance begin?

4.2.1.2.2.3 At what time was the objective taken?

4.2.1.3 Did the use of STANO equipment equipment decrease the number of stragglers during night movements?

4.2.1.3.1 What was the number of stragglers observed during each night road march?

4.2.1.3.2 What was the number of stragglers observed during each night assault?

EEA 4.2.2 Did the use of STANO equipment allow use of visual signals during periods of darkness?

RATIONALE: It is expected that the use of STANO equipment will improve the ability to use visual signals at night. It is expected that secure signals can be used to improve identification of friend or foe. It may be possible to use pre-arranged signals using STANO equipment, chemi-luminescent materials, or reflective markers for troop identification.

DATA REQUIREMENTS:

4.2.2.1 Were unit leaders able to communicate with their units patrols, squad, platoon) by using visual signals?

4.2.2.1.1 How many times was a visual signal attempted?

4.2.2.1.1.1 Was STANO equipment used to send the signal?

4.2.2.1.2 How many times was a visual signal attempted?

4.2.2.1.2.1 Was STANO equipment used to receive the signal?

4.2.2.1.3 How many times were visual signals incorrectly acted upon by the receiver?

4.2.2.1.4 How many times did the receiver request a repeat?

4.2.2.1.5 How many times was the receipt of the signal not acknowledged?

4.2.2.1.6 Was the visual signal from the unit leader to his units?

4.2.2.1.7 Was the visual signal from one unit to another?

NOTE: A definitive procedure must be provided for signalling via STANO devices and every signal should require confirmation of receipt?

EEA 4.2.3 Did the use of STANO equipment improve identification as friend or foe?

RATIONALE: It is expected that the use of STANO equipment will improve identification as friend or foe. It may be possible to use pre-arranged signals using STANO equipment or chemiluminescent materials for troop identification.

DATA REQUIREMENTS:

4.2.3.1 How many times were visual signals used to identify friendlies to each other?

4.2.3.1.1 What was the range at which the identification was made?

4.2.3.1.2 What device was used to perform the identification?

4.2.3.1.3 How many times was the identification incorrect?

4.2.3.1.4 How many times were vocal or other audible means used to identify incoming friendlies?

NOTE: Unit leaders should be instructed to use visual signals in preference to audible signals whenever possible.

4.2.3.2 Were reflective markers or other devices used to assist in recognition of individuals or vehicles?

4.2.3.2.1 What markers or devices?

4.2.3.2.2 How used?

4.2.3.2.3 Were signal flares employed?

4.2.3.2.4 How?

EEA 4.2.4 Did the use of STANO equipment provide more secure signalling?

RATIONALE: It is expected that there will be an increase in the use of visual signals for control and communications during the night through the use of STANO equipment. The degree of security involved in using visual signals will vary with such factors as technique used and distance involved.

DATA REQUIREMENTS:

4.2.4.1 How many times were visual signals using STANO equipment used for communications during the test period?

4.2.4.1.1 How many messages were sent using STANO equipment by both sender and receiver?

4.2.4.1.2 How many messages were sent using STANO equipment by either sender or receiver only?

4.2.4.2 Were visual signals secure?

4.2.4.2.1 How many of the visual signals were the aggressors able to observe?

4.2.4.2.2 How many of the visual signals were the aggressors able to understand?

SUBOBJECTIVE 4.3 To evaluate the impact of the employment of STANO equipment on communications facilities.

RATIOANALE: Additional communications traffic will be generated due to the information that employment of STANO equipment will produce. It is necessary to determine whether present communications facilities are adequate to handle this increased traffic without an unacceptable overload, and to provide a basis for decision on how to handle this overload if it occurs.

SUPPORTING INFORMATION:

EEA 4.3.1 Did the volume of intelligence information generated by the use of STANO equipment overload the unit communications system?

EEA 4.3.2 Did the communications traffic required to direct the employment of STANO equipment overload the communications system?

EEA 4.3.3 Did the use of STANO equipment facilitate the set up and operation of communication equipment?

EEA 4.3.1 Did the volume of intelligence information generated by the use of STANO equipment overload the unit communications system?

RATIONALE: It can be expected that the intelligence gathering function of STANO equipment will generate additional communications requirements which must be superimposed on the existing system. All messages generated by the use of STANO, equipment will be identified. Exact times of message, origin, and delivery must be recorded. This should also provide a determination as to whether the cause of overload was the inefficient use of the communications equipment or the increased volume of data.

DATA REQUIREMENTS:

4.3.1.1 How many messages of all types were generated for transmission (by method of communications: telephone, radio, messenger) during each active test period?

4.3.1.1.1 How many messages were generated for transmission by telephone during the test period?

4.3.1.1.2 How many messages were generated for transmission by telephone as a result of the use of STANO equipment during the test period?

4.3.1.1.3 How many messages were generated for transmission by radio during the test period?

4.3.1.1.4 How many messages were generated for transmission by radio as a result of the use of STANO equipment?

4.3.1.1.5 How many messages were generated for delivery by messenger during the test?

4.3.1.1.6 How many messages were generated for delivery by messenger as a result of the use of STANO equipment?

4.3.1.2 What was the average time of delay for each method of communications: telephone, radio, messenger?

4.3.1.2.1 How many of the messages by telephone were delayed?

4.3.1.2.2 What was the length of delay for each of the telephone messages?

4.3.1.2.3 How many of the messages by radio were delayed?

4.3.1.2.4 What was the length of delay for each of the radio messages?

4.3.1.2.5 How many of the messages delivered by messenger were delayed?

4.3.1.2.6 What was the length of delay for each of the messages delivered by messenger?

4.3.1.3 If there was an overload on the existing communication system due to use of STANO equipment, was it of such magnitude as to warrant an increase in unit communication nets capacity? (J)

NOTE: Indicate on the matrix shown below, for each message generated, the means of transmission (radio, telephone, messenger); whether the message is STANO generated or not; time submitted by originator; time the transmission begins; and the time that the transmission ends. Whenever the time the message was submitted and the time transmission begins are different, the reason for the delay of transmission must be shown in the remarks column.

Communications Log

Message Number	Means of Transmission	CSNVTA Generated		Directing CSNVTA Employment		Transmission Time		Remarks: Reason for Delays
		Yes	No	Yes	No	Begins	Ends	

Figure D-21

EEA 4.3.2 Did the communications traffic required to direct the employment of STANO equipment overload the communications system?

RATIONALE: It can be expected that the intelligence gathering functions of the STANO equipment may cause an overload on the communications system in directing this effort. All messages generated on the communications system in directing the employment of STANO equipment must be identified and recorded. This data should provide a determination as to whether the cause of overload was inefficient use of the communications system or the BOI of the STANO equipment was such that the present communications system could not handle the increased volume.

DATA REQUIREMENTS:

4.3.2.1 How many messages of all types were generated for transmission (telephone, radio, messenger) during each test run?

4.3.2.2 How many messages were generated for transmission (telephone, radio, messenger) in order to direct the employment of STANO equipment?

4.3.2.3 How many of these messages (telephone, radio, messenger) were delayed?

4.3.2.4 What was the average time of delay for each method of communications (telephone, radio, messenger)?

4.3.2.5 If there was an overload on the existing communications system caused by the need to direct the employment of the STANO equipment, was it of such magnitude as to warrant an increase in unit communications net capacity? (J)

4.3.2.6 Were any measures or field expedients developed to overcome any such adverse overloads? (J)

NOTE: Data for this EEA should be collected from the 4.3.1 data form.

EEA 4.3.3 Did the use of STANO equipment facilitate the set up and operation of communication equipment.

RATIONALE: It can be expected that the use of STANO equipment will facilitate the set up and operation of communication equipment. The answer to this EEA is expected to be obtained by a combination of subjective observations by the operators of the equipment, and objective comparisons of zero test results and STANO test results.

DATA REQUIREMENTS:

4.3.3.1 Did the STANO equipment reduce the time required for the set up of communications equipment?

4.3.3.1.1 Starting time and completion time for set up of company radio net?

4.3.3.1.2 Starting time and completion time for set up of company tactical telephone system?

4.3.3.1.3 Starting time and completion time for set up of remainder of radio net?

4.3.3.1.4 Starting time and completion time for set up of remainder of telephone system?

4.3.3.1.5 Were radio operators able to change frequencies quickly and accurately? (J)

NOTE: Indicate on the radio and telephone net installation forms below the type of net used, the name of the organization; the time the set-up operation started and the time the set-up operation was completed. Also, if applicable, if a change in frequency could be performed accurately. Enter any pertinent comments in the remarks column.

Radio Net Installation Times

Type of Net	Name of Organization	Set-Up Time		Change Frequency Accurately		Remarks
		Start	Complete	Yes	No	

Figure D-22

Telephone Net Installation Times

Type of Net	Name Of Organization	Set-Up Time		Remarks
		Start	Complete	

Figure D-23

SUBOBJECTIVE 4.4 To determine the effect of interactions of STANO equipment with other STANO equipment items relative to command, control, and communications.

RATIONALE: Some STANO equipment may interfere with, degrade the performance of, or prevent the use of other STANO items. This may result from over-illumination, from electronic interference, or from other causes. Certain items of STANO equipment may augment and improve the performance of another STANO item, when they are used in the same equipment mix. Certain STANO items are directly in competition in regard to the type and quality of information they produce. Data must be obtained to identify equipment interactions in order to maximize effectiveness of equipment mixes.

SUPPORTING INFORMATION:

EEA 4.4.1 Does any item of STANO equipment in the equipment mix interfere with, degrade the performance of, or prevent the use of any other STANO item for command, control, and communications?

EEA 4.4.2 Does any combination of STANO equipment tested in the equipment mix significantly improve the performance of another item of STANO equipment for command, control and communications?

EEA 4.4.3 Which items of STANO equipment perform essentially the same functions and produce the same type and quality of information?

Cause of Interference	Affected by Interference																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-24

EEA 4.4.1 Does any item of STANO equipment in the equipment mix interfere with, degrade the performance of, or prevent the use of any other STANO item for command, control, and communications?

RATIONALE: It is probable, due to the complexity and sensitivity of STANO items, that one item may interfere with, degrade or prevent the use of other STANO items. This may be due to over-illumination, electronic interference, or other reasons. Tests should be designed to identify all equipment combinations that are not compatible.

DATA REQUIREMENTS:

4.4.1.1 How many adverse interactions effects occurred using different STANO equipment items together?

4.4.1.1.1 What item(s) of STANO equipment interfered with the use of any other items of STANO equipment?

4.4.1.1.2 What item(s) of STANO equipment degraded the performance of any other items of STANO equipment?

4.4.1.1.3 What item(s) of STANO equipment prevented the use of any other items of STANO equipment?

4.4.1.1.4 Were any measures or field expedients developed to overcome any such adverse interference? Describe. (J)

4.4.1.1.5 What was the duration of the interference? Start time? End time?

4.4.1.1.6 What was the cause(s) of the interference?

4.4.1.1.7 What was the extent of the degradation? (J)

NOTE: Indicate on the matrix the item(s) of STANO equipment which interfered with the performance of other STANO equipment while in operation. Use D for degradation and P for preventing the use. If interference is temporary, indicate its duration in minutes after P or D. If such factors as distance between items or levels of light intensity involved are the controlling factors, indicate in the remarks section.

Cause of Interference	Affected by Interference																										
STANO Equipment ▶ ▼	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-25

EEA 4.4.2 Does any combination of STANO equipment tested in the equipment mix significantly improve the performance of another item of STANO equipment for command, control and communications?

RATIONALE: It is probable that certain items of equipment, used in combination, will improve the performance of one or more other items of equipment. This may consist of extensions of effective range of operation, improvements in accuracy of target acquisition and identification, reduction in false alarms, or other performance improvement. This EEA is designed to identify all combinations of STANO equipment items which complement performance.

DATA REQUIREMENTS:

4.4.2.1 Did any combination of STANO equipment result in improved performance for one of the items? Give specific details on each combination and the type and extent of improvement achieved.

NOTE: Indicate in the matrix shown below the items of STANO equipment which improved the performance of other STANO items in command, control, and communications. Enter R for improvement in range followed by the numerical increase in meters, e.g., R 100. Enter C for improvement in clarity of image or clarity of transmission. Enter any other additional information desired in the remarks paragraph.

Cause of Improvement	Affected by Improvement																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-26

EEA 4.4.3 Which items of STANO equipment perform essentially the same functions and produce the same type and quality of information?

RATIONALE: It is probable that within the STANO family of equipment there are items that have duplicate capabilities and produce essentially the same information, although the engineering design principles for each may be entirely different. This is desirable during the developmental and test stage, but the field tests should be tailored to identify any such duplication and to produce information on the relative merits of each item in such areas as reliability, maintainability, ease of operation, and other similar factors that can serve as a basis for decisions on which item should be selected for standardization and inventory procurement.

DATA REQUIREMENTS:

4.4.3.1 Were there any STANO equipment which produced duplicate information for command, control, and communications?

NOTE: Tally each case by equipment items.

4.4.3.2 Was one of the items more reliable?

4.4.3.3 Was one of the items easier to maintain?

4.4.3.4 Was one of the items easier to operate?

NOTE: Indicate on the matrix shown below the items of STANO equipment which duplicate the performance of other STANO items in command, control and communication. Enter S for items which duplicate (perform the same) or very similar function, in the square corresponding to the two items. Explain in the remarks paragraph the item recommended for retention and the reasons such as reliability, lightweight, ease of operation and maintenance. If possible quantify the information.

Cause of Duplication	Affected by Duplication																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
16. SVS AN/VSS-3																											
17. Miniscope AN/PAS-2																											
18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-27

SUBOBJECTIVE 4.5 To determine the effect of interactions of STANO equipment with other standard items of equipment relative to command, control, and communications.

RATIONALE: Employment of STANO equipment may prevent, degrade or enhance the use of standard items of equipment that are necessary for command, control and communications. The STANO equipment, however, will probably never be utilized as the primary method of effecting communications. Interactions between STANO and standard equipment may be caused by electronic interference, noise or some other reason. It is necessary to determine type and extent of the interference and field expedients developed to overcome this interference. It is also necessary to determine and measure the factors which control the interference or enhancement, i.e., distance between items or levels of intensity involved.

SUPPORTING INFORMATION:

EEA 4.5.1 Does any item of STANO equipment used for command, control, and communications interfere with, degrade the performance of, or prevent the use of any other standard item?

EEA 4.5.2 Does any combination of STANO equipment significantly improve the performance of another standard item of equipment used for command, control, and communications?

Cause of Interference \ Affected by Interference	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-28

EEA 4.5.1 Does any item of STANO equipment used for command, control and communications interfere with, degrade the performance of, or prevent the use of any other standard item?

RATIONALE: It is probable, due to the complexity and sensitivity of items employed for STANO, that one STANO item may interfere with, degrade or prevent the use of other standard items. This may be due to over-illumination, electronic interference, or some other reason. Tests should be designed to identify all equipment combinations that are not compatible.

DATA REQUIREMENTS:

4.5.1.1 What items of STANO equipment degrade the performance of any standard item of equipment?

4.5.1.2 What items of STANO equipment prevented the use of any standard items of equipment?

4.5.1.3 Were any measures or field expedients developed to overcome any such adverse interference?

4.5.1.4 What was the duration of the interference?

4.5.1.5 What was the cause of the interference?

4.5.1.6 What was the extent of the degradation?

NOTE: Indicate on the matrix shown below the items of STANO equipment which interfered with or were interfered by standard items of equipment used in command, control and communications. Use D for degradation and P for preventing the use. If interference is temporary, indicate duration in minutes after P or D. Indicate in the remarks section which items caused the interference or degradation to the other item. If such factors as distance between items or levels of light intensity are the controlling factors, also indicate this in the remarks section. If field expedients are developed to overcome the interference, describe in the remarks section.

Affected by Interference / Cause of Interference	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-29

EEA 4.5.2 Does any combination of STANO equipment significantly improve the performance of another standard item of equipment used for command, control, and communications.

RATIONALE: It is probable that certain items of STANO equipment, used in combination, will improve the performance of one or more standard items of equipment. This may consist of extensions of effective range of operation, accuracy in target acquisition and identification, reduction in false alarms, or other similar performance improvement. This EEA is designed to identify all combinations of STANO equipment items that complement standard item performance.

DATA REQUIREMENTS:

4.5.2.1 Did any combinations of STANO equipment result in improved performance for one of the standard items? Give specific details on each such combination and the type and extent of improvement achieved.

NOTE: Indicate in the matrix shown below, the items of STANO equipment which improved the performance of other items relative to command and control. Enter R for improvement in range followed by the numerical increase in meters, e.g., R 100. Enter C for clarity of image or transmission. Enter any other improvement discovered by using the remarks section.

Cause of Improvement \ Affected by Improvement	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-30

OBJECTIVE 5

1. PURPOSE: This appendix outlines the subobjectives, EEA and data requirements pertaining to test objective 5.

2. OBJECTIVE 5: To determine the impact of reliability and maintenance factors of STANO equipment on a unit's ability to perform its mission.

RATIONALE: Employment of STANO equipment should enhance the unit mission accomplishment, however, the reliability and maintenance of STANO equipment may detract from this capability. The extent and nature of this detraction can have a profound impact on decisions related to employment of equipment. Some of the factors which may contribute to this detraction are:

a. Interdependence of equipment.

b. Unit dependency on STANO equipment to accomplish assigned missions.

c. Operator maintenance requirements.

d. Supply of consumable items.

The NOTTS Team will have complete responsibility for maintenance, management of the maintenance float, handling of supply and resupply of equipment and equipment repair parts for the SEA NITEOPS STANO equipment but not for TOE items. This creates an artificial situation with regard to combat service support. In spite of these problems, it is essential to determine, to whatever extent possible, the effect of maintenance on performance.

3. SUPPORTING INFORMATION:

SUBOBJECTIVE 5.1 To evaluate the impact of the reliability of STANO equipment on the unit's ability to perform its mission.

SUBOBJECTIVE 5.2 To evaluate the impact of maintainability of STANO equipment.

SUBOBJECTIVE 5.3 To evaluate the impact of maintenance and reliability on interdependent items of STANO equipment.

SUBOBJECTIVE 5.4 To provide an evaluation of human factors engineering requirements for the operation and maintenance of STANO equipment.

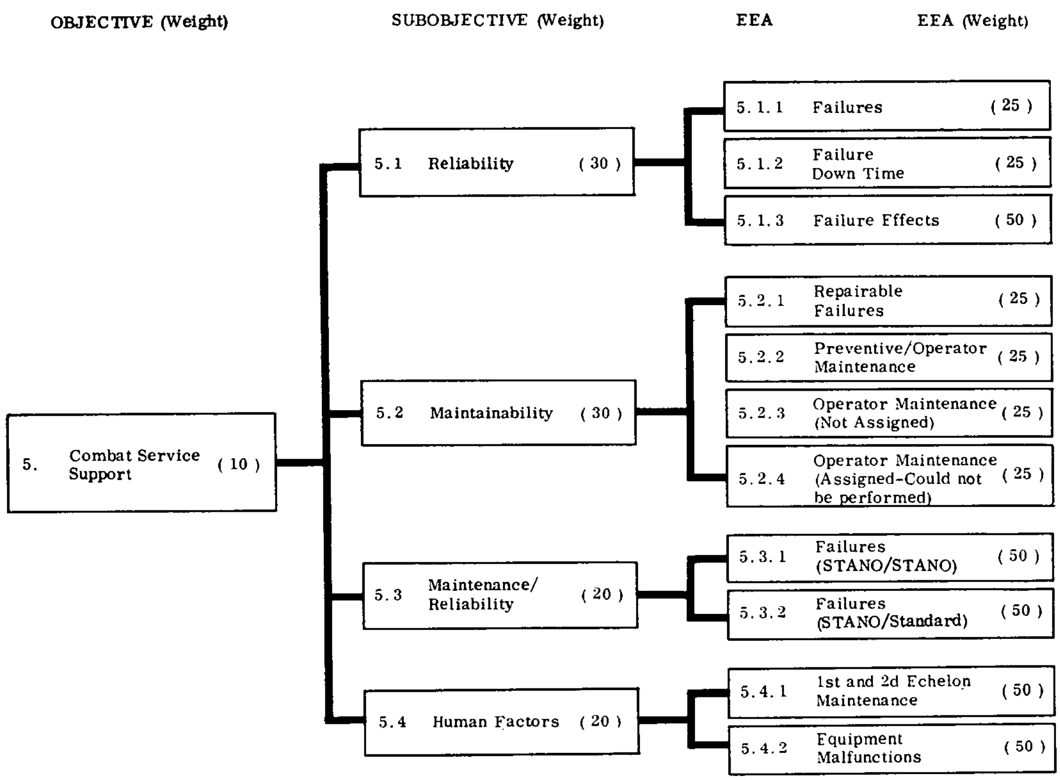

Figure D-31 Logic Diagram - Objective 5

SUBOBJECTIVE 5.1 To evaluate the impact of the reliability of STANO equipment on the unit's ability to perform its mission.

RATIONALE: It is assumed that some of the equipment will fail to function properly during the test period. This subobjective is designed to identify failures by type of STANO equipment, frequency, and effect. These determinations are intended to provide an improved basis for decisions on expected unit effectiveness, improvement in doctrine and on improved BOI.

SUPPORTING INFORMATION:

EEA 5.1.1 What STANO equipment failed during the test period?

EEA 5.1.2 What was the average equipment failure down time for each type of STANO equipment?

EEA 5.1.3 What was the effect of equipment failure on the unit's mission?

EEA 5.1.1 What STANO equipment failed during the test period?

RATIONALE: This EEA should provide insight into the nature and frequency of STANO equipment failure.

DATA REQUIREMENTS:

5.1.1.1 How many pieces of STANO equipment by type were issued to the test units each day?

NOTE: The issue of STANO equipment to units and operators must be controlled by a central authority within the Test Directorate regardless of the initial responsibility for the various items and types of equipment. If not, a new supply section will have to be set up within the tested unit each time the organization is changed. Only with such a central authority and control can the following questions be answered with a high degree of assurance that the answers are valid and reliable throughout each test day. It is further recommended that the chief controller be responsible for the control of equipment issue, including changes that occur during the day, e.g., one item of a particular type turned in for another item of a different type or capability. The chief data collector should be responsible for the collection of this data and for insuring that the data is valid and reliable.

5.1.1.1.1 How many T-7 binoculars were issued each day?

5.1.1.1.2 How many M-18 binoculars were issued each day?

5.1.1.1.3 How many metascope assemblies (AN/PAS-6) were issued each day?

5.1.1.1.4 How many metascope kits (M-17 Range Finder) were issued each day?

5.1.1.1.5 How many night vision sights AN/PVS-2, (Starlight Scope) were issued each day?

5.1.1.1.6 How many hand held intensifying telescopes, AN/PVS-3, (Miniscopes) were issued each day?

5.1.1.1.7 How many Night Vision Sights, AN/TVS-2, (Crew Served Weapon) were issued each day?

5.1.1.1.8 How many Night Vision Sights, AN/TVS-4, (Tripod Mounted) were issued each day?

5.1.1.1.9 How many Searchlights (AN/MSS-3) were issued each day?

5.1.1.1.10 How many Searchlights (AN/VSS-3) were issued each day?

5.1.1.1.11 How many Surveillance Radars (AN/PPS-5) were issued each day?

5.1.1.1.12 How many Night Observation Device-LR were issued each day?

5.1.1.1.13 How many Airborne Searchlights were issued each day?

5.1.1.1.14 How many Stabilized Night Sights were issued each day?

5.1.1.1.15 How many Night Vision Goggles were issued each day?

5.1.1.1.16 How many Short Range Hand Held Viewers were issued each day.

5.1.1.1.17 How many Surveillance Radars (AN/PPS-9) were issued each day?

5.1.1.1.18 How many searchlights (AN/VSS-2) were issued each day?

5.1.1.1.19 How many Firing and Aiming Devices were issued each day?

5.1.1.1.20 How many Night Observation Devices-MR were issued each day?

5.1.1.1.21 How many sensors by type were issued each day?

5.1.1.2 How many failures, by type of STANO equipment, occurred during each test day?

NOTE: Data will be obtained through TAERS forms and/or NOTTS Team logbooks.

5.1.1.2.1 How many T-7 Binoculars failed each day?

5.1.1.2.2 How many M-18 Binoculars failed each day?

5.1.1.2.3 How many Metascope assemblies (AN/PAS-6) failed each day?

5.1.1.2.4 How many Metascope Kits (M-17 Range Finders) failed each day?

5.1.1.2.5 How many Night Vision Sights, AN/PVS-2 (Starlight S Scopes) failed each day?

5.1.1.2.6 How many Hand Held Intensifying Telescopes, AN/PVS-3 (Mini-scopes) failed each day?

5.1.1.2.7 How many Night Vision Sights, AN/TVS-2 (Crew Served Weapon) failed each day?

5.1.1.2.8 How many Night Vision Sights, AN/TVS-4, (Tripod Mounted) failed each day?

5.1.1.2.9 How many Searchlights (AN/MSS-3) failed each day?

5.1.1.2.10 How many Searchlights (AN/VSS-3) failed each day?

5.1.1.2.11 How many Surveillance Radars (AN/PPS-5) failed each day?

5.1.1.2.12 How many Night Observation Devices (Long Range) failed each day?

5.1.1.2.13 How many Airborne Searchlights failed each day?

5.1.1.2.14 How many Stabilized Night Sights failed each day?

5.1.1.2.15 How many Night Vision Goggles failed each day?

5.1.1.2.16 How many Short Range Hand Held Viewers failed each day?

5.1.1.2.17 How many Surveillance Radars (AN/PPS-9) failed each day?

5.1.1.2.18 How many Searchlights, AN/VSS-2 failed each day?

5.1.1.2.19 How many Firing and Aiming Devices failed each day?

5.1.1.2.20 How many Night Observation Devices-MR failed each day?

5.1.1.2.21 How many sensors by type failed each day?

5.1.1.3 What was the cause of each failure as determined by the NOTTS Team and maintenance support repair personnel?

NOTE: Data will be obtained through equipment log books and equipment data forms - Part II. It will be tabulated, summed and analyzed by the analysis group and the most prevalent causes of failure determined and stated in the final report of test.

5.1.1.4 What was the average percentage of nighttime failures for each type STANO equipment during the entire test period?

NOTE: Total number of items that failed each night divided by the total number of items used each night will provide the average percentage of failure. Caution will have to be exercised in order to identify single items that fail repeatedly. If failure rate for a single item is "excessive" data for this item should be removed from analysis.

5.1.1.5 What was the total equipment hours actually utilized in operating each type of STANO equipment?

NOTE: Data will be obtained through equipment log books, TAERS forms and equipment data forms - Part I.

EEA 5.1.2 What was the average equipment failure down time for each type of STANO equipment?

RATIONALE: The time required to perform repairs on STANO equipment will be less than the total down time. The time out of action or use includes time required for evacuation, time waiting maintenance, time waiting parts, time to repair, and time to return the item to the test unit. Each of these elements will be recorded. The actual maintenance time plus the other elements of down time are indications for determining the size and location of the maintenance float and the size and type of maintenance unit required to support the tested equipment. The NOTTS Team will gather information regarding down-time on all the items contained in the STANO equipment package. It should be noted, however, that the NOTTS Team will utilize maintenance concepts and training which create an artificial situation with regard to combat service support.

DATA REQUIREMENTS:

5.1.2.1 For each failure of STANO equipment, when did the failure occur?

NOTE: Analysis section should obtain exact date/time from equipment log books, TAERS forms, and equipment data forms. A check into what type action was conducted, i.e., attack, defnese, etc. can be obtained by reviewing scenarios.

5.1.2.2 For each STANO equipment failure, when was item picked up or turned in for repair?

5.1.2.3 For each STANO equipment failure, how much time elapsed awaiting parts?

5.1.2.4 For each STANO equipment failure, when was repair work commenced by maintenance personnel?

NOTE: Data can be obtained from TAERS forms and equipment data forms.

5.1.2.5 For each STANO equipment failure when was repair work completed?

NOTE: Exact date/time can be obtained from TAERS forms and equipment data forms.

5.1.2.6 For all failures of the same type of STANO equipment, what was the average time per item measured from the time of failure until the equipment was again available for use in the test?

5.1.2.7 What percent of the failures were non-repairable?

5.1.2.8 Where and by whom were repairs accomplished?

EEA 5.1.3 What was the effect of equipment failure on the unit's mission?

RATIONALE: The logistic and maintenance support provided to the test troops will not be representative of normal military repair and resupply in an operational area. It is possible that an item of STANO equipment is so important, and the number of such items in the test so limited, that replacement will be desirable each time the equipment fails to function properly. The normal evacuation time, the average repair time, the reliability, as well as the requirements of the unit will influence the determination of a maintenance float and type of maintenance support the unit requires. This test will provide measurable data for many of these factors in answers to questions under the other objectives, however, critical judgement of experienced individuals must also be applied.

DATA REQUIREMENTS:

5.1.3.1 In the opinion of the test unit commander, platoon leaders and above, how long can he tolerate the loss of each STANO item issued without a major adverse impact on his operational mission during each test run? (J)

NOTE: This question will be answered on a Commander's Debriefing Form after each test run.

5.1.3.2 What was the impact on the unit's performance during the operation when availability of STANO equipment was reduced by maintenance?

NOTE: This data requirement will be answered by determining from TAERS forms and equipment data forms when a unit's compliment of STANO equipment was reduced by 10% or more and examining the effect on questions and EEA under the other four objectives that address performance levels.

SUBOBJECTIVE 5.2 To evaluate the impact of maintainability of STANO equipment.

RATIONALE: Assuming that failures will occur, this subobjective is designed to provide information on the repairability of the device, the man hours required, and the level at which repair was performed. Information regarding the STANO equipment will be furnished by the NOTTS Team. This subobjective will also provide information on operator maintenance tasks and their impact on the unit's ability to perform its mission.

SUPPORTING INFORMATION:

EEA 5.2.1 For each type of STANO equipment tested, how many failures occurred; were they all repairable, and if so, what was the average repair time?

EEA 5.2.2 For each type of STANO equipment what was the average time required to perform operator maintenance?

EEA 5.2.3 What maintenance functions on STANO equipment could be performed by operators but were not assigned?

EEA 5.2.4 What assigned operator maintenance functions on STANO equipment could not be performed by operators?

EEA 5.2.1 For each type of STANO equipment tested how many failures occurred; were they all repairable; and if so, what was the average repair time?

RATIONALE: This EEA will provide data on the maintainability of different items of STANO equipment, and pinpoint any items that have a high failure rate or a long repair time. This information will contribute both to the computation of the required maintenance float and to the identification of those items meriting close examination regarding their suitability for inclusion in the family of STANO equipment.

DATA REQUIREMENTS:

5.2.1.1 How many items of each type of STANO equipment were issued during the field test?

NOTE: Data can be obtained from Data Requirement 5.1.1.1.

5.2.1.2 How many items of each type of STANO equipment failed during the course of the field test?

NOTE: Data can be obtained through equipment log books, equipment data forms, or data requirement 5.1.1.2.

5.2.1.3 What was the most common cause of equipment failure by type of STANO equipment?

5.2.1.4 What was the average number of man hours required for repair for each type of equipment?

NOTE: Data can be obtained by equipment log books and equipment data forms - Part II.

5.2.1.5 What percent of the failures were non-repairable by type of STANO equipment?

NOTE: Data can be obtained from equipment log books and equipment data forms - Part II.

5.2.1.6 Where and by whom were repairs accomplished?

NOTE: The information for this data requirement will be obtained from the equipment data forms - Part II.

5.2.1.7 Based on the proposed issue for each type unit and equipment item what was the opinion of the test unit commanders (platoon commander and above) on the size that the equipment float should be to support his unit? (J)

NOTE: This judgemental question will be placed on a Commander's. Debriefing Form.

EEA 5.2.2 For each type of STANO equipment what was the average time required to perform operator maintenance?

RATIONALE: It is expected that equipment operators can and should conduct operator maintenance on STANO equipment. Maintenance will be outlined by the NOTTS Team. This EEA should provide information to estimate the time required for these tasks and the subsequent impact on a unit's resources.

DATA REQUIREMENTS:

5.2.2.1 What time was required for operator maintenance per day on each item of STANO equipment?

NOTE: Data will be obtained from equipment log books and equipment data forms - Part I.

5.2.2.2 What was the total number of man-hours of preventive maintenance performed by the operator on each type of STANO equipment during the test period?

5.2.2.3 What was the total number of man-hours of corrective maintenance performed by the operator on each type of STANO equipment during the test period?

5.2.2.4 Was a single man sufficient to perform all tasks required in operator maintenance?

5.2.2.5 What was the total number of man-hours of operator maintenance performed on each item of night equipment during the entire test period?

NOTE: Data can be obtained from equipment log books and equipment data forms - Part I.

EEA 5.2.3 What maintenance functions on STANO equipment could be performed by operators, but were not assigned?

RATIONALE: Maintenance and supply support of the STANO equipment will be provided by the NOTTS Team. This team will also train operators and direct maintenance functions. This EEA will attempt to gain information on additional maintenance functions that could have been assigned.

NOTE: The data for this EEA is entirely subjective so it should be used for descriptive purposes only and given a zero weight in the evaluation.

DATA REQUIREMENTS:

5.2.3.1 In the opinion of the NOTTS Team chief what maintenance functions could be performed by equipment operators on each type of STANO equipment above those initially directed by the NOTTS Team?

5.2.3.2 In the opinion of the NOTTS Team chief, could the additional operator maintenance functions be assigned without extensive training?

5.2.3.3 In each case of equipment failure could the failed component be identified by an operator without the use of diagnostic tools or equipment? (NOTTS Team chief's opinion)

NOTE: Data to the above questions will be answered on NOTTS Team Debriefing Form.

5.2.3.4 In the opinion of the NOTTS Team chief, is each piece of STANO equipment designed to permit operators replacement of failed components other than batteries?

5.2.3.5 What maintenance functions did the operator perform?

5.2.3.5.1 Was the operator able to change batteries? Time?

5.2.3.5.2 Is the operator able to perform preventive maintenance service tasks with ease and simplicity?

EEA 5.2.4 What assigned operator maintenance functions on STANO equipment could not be performed by operators?

RATIONALE: The NOTTS Team will train and direct the operator maintenance functions. This EEA is designed to provide information on assigned functions that could not be performed.

DATA REQUIREMENTS:

5.2.4.1 In the opinion of the NOTTS Team chief what assigned maintenance functions could not be performed on each type of STANO equipment?

5.2.4.2 Were these operator maintenance functions suggested by the contractor or by the NOTTS Team?

5.2.4.3 Were special tools or equipment required for the assigned maintenance functions?

NOTE: Data to the above questions will be answered on the NOTTS Team Debriefing Form.

NOTE: The data for this EEA is entirely subjective so it should be included as descriptive data only and given a zero weight in the evaluation.

SUBOBJECTIVE 5.3 To evaluate the impact of maintenance and reliability on interdependent items of STANO equipment.

RATIONALE: The failure of some STANO equipment may degrade or prohibit the use of other STANO equipment. In addition, the requirements of some standard equipment may be incompatible and reduce the unit mission capability. This subobjective is designed to evaluate the impact of these factors on unit performance.

SUPPORTING INFORMATION:

EEA 5.3.1 Did the failure of one type of STANO equipment interfere with, degrade the performance of, or prevent the use of any other STANO item?

EEA 5.3.2 Did the failure of standard items of troop-issue equipment interfere with, degrade the performance of, or prevent the use of any item of STANO equipment?

EEA 5.3.1 Did the failure of one type of STANO equipment interfere with, degrade the performance of, or prevent the use of any other STANO item?

RATIONALE: It is possible, due to the complexity and sensitivity of STANO equipment, that failure of one item may interfere with, degrade, or prevent the use of other STANO items. Evaluations should be made to identify the combinations which are affected.

DATA REQUIREMENTS:

5.3.1.1 Did the failure of any item(s) of STANO equipment interfere with, degrade the performance of or prevent the use of any other item of STANO equipment?

5.3.1.2 Were any measures or field expedients developed to overcome any such problems?

5.3.1.3 Was the problem of a temporary nature? If so, what was its duration?

NOTE: Indicate on the matrix below the items of STANO equipment whose failure interferes by degrading or preventing the use of any other STANO item of equipment. Use D for degradation and P for preventing the use. If interference is temporary, indicate its duration in minutes after P or D. Indicate in the remarks section measures or field expedients developed to overcome adverse interference.

Cause of Interference	Affected by Interference																										
STANO Equipment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. AL (AN/PAS-8)																											
2. AN/VSS-2 S/L																											
3. NVS (AN/TVS-4)																											
4. Abn S/L																											
5. NOD-LR																											
6. SNS Cobra																											
7. AN/MSS-3 S/L																											
8. PPS-9																											
9. NVG																											
10. Metascope Kit Rge Finder																											
11. HHV																											
12. Starlight Scope AN/PVS-2																											
13. CWSS AN/TVS-2																											
14. NOD-MR																											
15. Metascope PAS-6																											
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18. PPS-5																											
19. T7 Binocular																											
20. M18 Binocular																											
21. MINI-HANSID																											
22. MAGID																											
23. PIRID																											
24. GSID																											
25. ADSID																											
26. ACOUSID II																											
27. ARFBUOY & NBP																											

Remarks:

Figure D-32

EEA 5.3.2 Did the failure of standard items of troop-issue equipment interfere with, degrade the performance of, or prevent the use of any item of STANO equipment?

RATIONALE: It is possible that failure of particular standard item(s) of troop-issue equipment may interfere with, degrade, or prevent the use of items of STANO equipment. This EEA is designed to identify the combinations which are affected.

DATA REQUIREMENTS:

5.3.2.1 Did the failure of any standard item(s) of troop-issue equipment interfere with, degrade the performance of, or prevent the use of any STANO item of equipment? If so, identify the item(s) and describe the cause and extent of interference.

5.3.2.2 Were any measures or field expedients developed to overcome any such adverse problem?

5.3.2.3 Was the problem of a temporary nature? If so, what was its duration?

NOTE: Indicate on the matrix below any failure of standard troop-issue equipment which interfered by degrading or preventing the use of any item of STANO equipment listed. Use D for degradation and P for preventing its use. If interference was temporary, indicate the duration in minutes after P or D. The remarks section should be used for indicating the type equipment in each class, short description of interference, and any field expedients developed to overcome the interference.

Affected by Interference / Cause of Interference	Rotary Wing Aircraft	Fixed Wing Aircraft	Wheeled Vehicles	Tracked Vehicles	Tanks	Radios	Other Commo Equip	Small Arms Weapons	Crew-Served Weapons	Mortars	Artillery	Generators	Personnel Equipment	Flashlights	Flood Lights	Flares	Tracers	Other
1. AL (AN/PAS-8)																		
2. AN/VSS-2 S/L																		
3. NVS (AN/TVS-4)																		
4. Abn S/L																		
5. NOD-LR																		
6. SNS Cobra																		
7. AN/MSS-3 S/L																		
8. PPS-9																		
9. NVG																		
10. Metascope Kit Rge Finder																		
11. HHV																		
12. Starlight Scope AN/PVS-2																		
13. CWSS AN/TVS-2																		
14. NOD-MR																		
15. Metascope PAS-6																		
16. SVS AN/VSS-3																		
17. Miniscope AN/PAS-2																		
18. PPS-5																		
19. T7 Binocular																		
20. M18 Binocular																		
21. MINI-HANSID																		
22. MAGID																		
23. PIRID																		
24. GSID																		
25. ADSID																		
26. ACOUSID II																		
27. ARFBUOY & NBP																		

Remarks:

Figure D-33

SUBOBJECTIVE 5.4 To provide an evaluation of human factors engineering requirements for the operation and maintenance of STANO equipment.

RATIONALE: If human factors engineering requirements have not been designed into the equipment, relevant to maintenance, then employment of equipment could be strongly affected.

SUPPORTING INFORMATION:

EEA 5.4.1 Was the operator able to perform his assigned maintenance task?

EEA 5.4.2 What were the basic causes of equipment malfunction?

EEA 5.4.3 Was the operation of the STANO equipment simple and safe?

EEA 5.4.1 Was the operator able to perform his assigned maintenance task?

RATIONALE: The inability of the soldier to perform maintenance in the field has a number of serious effects on the military effort. The worst effect is to jeopardize the success of the mission. Another effect is to increase the cost of support required in maintaining equipment in the field. Equipment that cannot be easily maintained in the field imposes a heavy strain on the storage, supply, and production of this equipment. The other important effect is the large requirement of skilled personnel needed to maintain the equipment. The shortage, the long training period, and the rapid turnover of such men make this a particularly acute problem.

DATA REQUIREMENTS:

5.4.1.1 Was the operator able to easily gain access to remove and replace components?

5.4.1.1.1 Was ease of accessibility provided for all parts and components requiring maintenance, adjustment, inspection, removal or replacement?

5.4.1.1.2 Were remove and replace components installed so that access is prevented by the presence of non removal components?

5.4.1.1.3 Were components installed so that there is insufficient space to use required tools?

5.4.1.1.4 Were components installed so that access is prevented by the presence of structural members?

5.4.1.1.5 Were remove and replace components installed so that they could be replaced without first removal of other components?

5.4.1.1.6 Were human strength limits considered in lifting, carrying or pushing STANO equipment?

5.4.1.1.7 Were environmental factors considered in the design of STANO equipment?

5.4.1.2 Was the operator able to perform preventive maintenance tasks with ease and simplicity?

5.4.1.2.1 In which equipment are standard lubrication fittings used so that special extensions or fittings are not required?

5.4.1.2.2 For those items requiring batteries, was the operator able to change batteries easily at night?

5.4.1.2.3 For those items requiring batteries, did the operator require more than five (5) minutes to change batteries?

5.4.1.2.4 For those items requiring a generator power supply, was the operator able to maintain the power source?

5.4.1.3 Is the equipment, where possible, broken down into physical and functionally distinct units to facilitate removal and replacement of components and parts in the field?

EEA 5.4.2 What were the basic causes of equipment malfunction?

RATIONALE: The reasons for hardware failures are as numerous as the number of parts that go into the design of the equipment. However, there are several categories of equipment failures. One would be directed toward those malfunctions that are characteristic of the design of the equipment itself. These malfunctions would be resulting from such things as reliability, incompatability of parts, complex electrical or mechanical design, etc. Another category of malfunctions would be those induced by factors external to the piece of equipment, i.e., environmental factors. The third category would be those malfunctions that would be best termed as "operator induced". It is of vital importance to this test and subsequent utilization of this equipment in a combat environment to know how the equipment failed.

DATA REQUIREMENTS:

5.4.2.1 How many equipment malfunctions were attributable to the design of the equipment?

5.4.2.1.1 What percentage of equipment malfunctions were due to failures within the equipment itself?

5.4.2.1.2 What was the nature of each failure due to equipment design?

5.4.2.1.3 What were the symptoms of the failure?

5.4.2.1.4 Was the failure noticed through a gradual degrading of equipment performance or was the failure sudden?

5.4.2.1.5 Was the operator able to perform corrective action to bring the equipment back "on the line?"

5.4.2.2 Were malfunctions caused by external environmental factors?

5.4.2.2.1 For which equipment was rain, humidity, dust, sunlight, etc. the cause of the malfunction?

5.4.2.2.2 How was the equipment normally protected from the elements during its utilization?

5.4.2.2.3 Could the malfunctions be corrected in the field by the operator?

5.4.2.2.4 Which malfunctions could not be corrected in the field?

5.4.2.3 What malfunctions were "operator induced"?

5.4.2.3.1 For which equipment did the operator cause the failure because of his inability to operate the equipment correctly?

5.4.2.3.2 For which equipment were malfunctions caused because the operator did not care for his equipment during transport and set-up?

5.4.2.3.3 When the operator was performing field maintenance, did he induce further malfunctions into the equipment because of his inability to properly perform his assigned maintenance tasks?

5.4.2.3.4 What was the nature of the malfunction?

5.4.2.3.5 What were the symptoms of the malfunction?

5.4.2.3.6 Did the equipment gradually fail or did it suddenly cease to operate correctly?

EEA 5.4.3 Was the operation of the STANO equipment simple and safe?

5.4.3.1 What operation problems did the operator encounter?

5.4.3.1.1 Was manipulation of the controls simple and easily facilitated?

5.4.3.1.2 Were controls placed on the equipment in such a manner that they could not be comfortably manipulated by either hand?

5.4.3.1.3 Could the device be adjusted or focused while in motion?

5.4.3.2 What human engineering visual problems did the operators encounter?

5.4.3.2.1 Did lenses or displays fog up due to humidity? Could the device be used effectively by men wearing glasses?

5.4.3.2.2 How many targets were presented to men wearing glasses?

5.4.3.2.3 How many targets were detected by men wearing glasses?

5.4.3.2.4 Were safety features designed into the equipment to prevent operator injury or operator induced malfunctions?

5.4.3.3 Did any man receive an electrical shock? Number, Why, Item.

5.4.3.4 Did any of the operators or maintenance technicians sustain injuries that can be attributed to faulty design features in the equipment?

5.4.3.4.1 What type of injury resulted from the operational utilization of this equipment?

5.4.3.4.2 What time did the injury take place?

5.4.3.4.3 Under what conditions (weather, unit mission, fatigue, etc.) did the injury occur?

5.4.3.4.4 What circumstances surrounded the injury? (Provide a detailed account as to the reasons for the injury.)

5.4.3.5 How many cases of illness were reported during the conduct of field operations?

5.4.3.5.1 What was the nature of the illness?

5.4.3.5.2 If the individual had been using night operations equipment, at what time did he begin operating the equipment?

5.4.3.5.3 At what time did he become ill?

5.4.3.5.4 At what time did the symptoms disappear?

5.4.3.5.5 Could the individual continue using the equipment when he was experiencing symptoms of illness?

5.4.3.5.6 To what extent was individual performance affected by symptoms of illness?

5.4.3.5.7 How were the symptoms alleviated after the individual stopped using the equipment?

5.4.3.5.8 How were the symptoms alleviated when the individual continued to use the equipment in the performance of his assigned mission?

5.4.3.6 How did the fatigue factor influence individual and unit performance during the conduct of this evaluation?

5.4.3.7 To what extent was eye fatigue evidenced among the equipment operators?

5.4.3.7.1 How many times did operators complain of eye fatigue?

5.4.3.7.2 How many times did operators wearing corrective lenses complain of eye fatigue?

5.4.3.7.3 At what time did the operator begin to use the equipment?

5.4.3.7.4 What were the periods of time an operator was assigned to operate continuously, by device?

5.4.3.7.5 At what time was eye fatigue noticed after the operators began using the equipment?

5.4.3.7.6 Was there an adjustment period during which time eye fatigue and other physiological symptoms were noticed, but then disappeared as the individual continued to use the equipment?

5.4.3.7.7 How long was this adjustment period? Ask operator.

5.4.3.7.8 What techniques did the operator develop for alleviating the effects of eye fatigue?

5.4.3.7.9 How did eye fatigue influence the performance of the individual using the equipment?

NOTE: Compare effectiveness early in the night with performance later.

5.4.3.7.10 To what extent were general fatigue factors present?

5.4.3.7.11 How did fatigue influence the levels of unit performance?

5.4.3.7.12 Did vehicular motion have a noticeable effect upon operator fatigue levels?

5.4.3.7.13 How long did it take the individual's eyes to readjust after being taken off duty with the equipment?

5.4.3.7.14 What was the effect on performance of turning on a light (flashlight, flare, searchlight, etc.) while the operators were using the equipment?

5.4.3.7.15 Were bright reflections from water or other objects a problem for the viewing operator?

5.4.3.7.16 Were there times (during bright moonlight, etc.) when operators were more effective without the device than they were with it?

5.4.3.8 Was any part of the set up tear down process excessively difficult or complicated?

5.4.3.8.1 How much time did the set up process require?

5.4.3.8.2 How much time did the tear down process require?

5.4.3.8.3 Were any parts of the equipment dropped during the set up or tear down process? Was the dropped component damaged?

5.4.3.9 What deficiencies in training were detected?

5.4.3.9.1 How many questions were asked by the operator during the set up of the device?

5.4.3.9.2 How many questions were asked by the operator regarding the operation of the device?

5.4.3.9.3 How many errors were noted in the operation of the device?

5.4.3.9.4 How many errors were noted in the operation of the device?

5.4.3.9.5 How many questions were asked by the operator concerning the user-maintenance of the device?

5.4.3.9.6 How do the answers to the previous questions concerning operation of the device differ between the first hour of operation and the last hour of operation?

GENERAL REQUIREMENTS

1. PURPOSE: This appendix outlines additional data collection requirements which are necessary for the conduct of the analysis

2. GENERAL REQUIREMENTS: It is necessary that large amounts of data be collected under a general category since external and constantly changing general conditions affect the performance of the men and equipment. The data collected under the specific objectives will vary as a result of many considerations that cannot be controlled. The conditions under which any specific item of data is collected should be sufficiently indicated to provide a basis for judging the validity of that item of data and showing what other data it can or cannot be compared with. For example, on a bright moonlit, clear night, in an open field, a man with no night vision equipment may do well or better than a man on a heavily overcast, foggy rainy night, in the middle of a thick jungle, with some very excellent night vision equipment. These requirements will be numbered beginning with 6.

DATA REQUIREMENTS:

6.1 What was total number of test days?

NOTE: This test has been designed to run for a specified number of days, but the weather and other events could change the test schedule. An accurate record of the actual days of run for each category must be maintained.

6.1.1 How many days were utilized for the Pilot Test Run?

6.1.2 How many test days were utilized for the STANO Control Run?

6.1.3 How many test days were utilized for the STANO Run?

6.1.4 How many test days were utilized for any reserve runs?

6.2 Light level will be determined at least at three different widely separated locations within the test area by three different collectors, every hour from 1800 through 0600 the following day. The following will also be collected:

6.2.1 Time moon rose or becaue visible

6.2.2 Time moon disappeared

6.2.3 General lighting conditions

6.2.3.1 Scattered clouds

6.2.3.2 Light overcast

6.2.3.3 Heavy overcast

6.2.3.4 Quarter moon

6.2.3.5 Half Moon

6.2.3.6 Full moon

6.2.3.7 No moon

6.2.4 Was light augmented?

6.2.4.1 Pink direct

6.2.4.2 Pink scattered

6.2.4.3 White direct

6.2.4.4 White scattered

6.3 Weather will be reported on at the same times and locations as light level except that the following will also apply and be collected 24 hours per day.

6.3.1 Temperature by hour

6.3.2 Time percipitation started

6.3.3 Time fog rolled in

6.3.4 Time fog dissipated

6.4 Terrain conditions are also a variable but which must be collected by each collector relevant to the unit and activity on which he is collecting data.

6.4.1 What were the foliage conditions under which operations were taking place?

6.4.1.1 Heavy brush

6.4.1.2 Light brush

6.4.1.3 Open

6.4.1.4 Wooded

6.4.2 What was the soil condition?

6.4.2.1 Hard surface road-dry

6.4.2.2 Hard surface road-wet

6.4.2.3 Poor/no surface road-dry

6.4.2.4 Poor/no surface route-muddy

6.4.2.5 Leaves or pine needles

6.4.2.6 Snow

6.4.3 What type of terrain did operations take place in?

6.4.3.1 Hilly

6.4.3.2 Mountainous

6.4.3.3 Level

6.5 Personnel levels affect the performance of units across all objectives. A complete record should be kept of personnel availability throughout the test period.

6.6 Equipment availability also affects effectiveness. Both STANO and TOE equipment availability should be kept track of hour by hour throughout the test period, i.e., time a truck breaks down, time delivered to unit after repair, etc.

6.7 Supply is also a consideration in that if it is not responsive to requirements, i.e., if refueling of vehicles cannot be performed at night without lights, it can adversely affect operations. Only by keeping track of the supply considerations can we be sure that effectiveness or the lack of it can be attributed only to the STANO equipment.

6.8 Special incidents should be reported during the process of debriefing if not obtained by a data collector. Data collectors should be informed during their training that they are expected to carry blank paper to write up these incidents with as much specific

information as possible. For example, "Trailer turned over in road blocking route of move at 2320. Eleven vehicles had to wait until trailer righted at 0015. This latter part of company arrived at destination at 0142," or "Search and clear operation called off by commander at 1015 because of etc., etc."

6.9 Learning effects must also be recorded. A series of identical or similar incidents are included in the scenario for this purpose. Comparison of performance during these incidents by identical pieces of equipment on selected questions relative to effectiveness under all the objectives of the test should be made and charted across the entire test period and detailed in the final report of test.

6.10 Personnel may have operational maintenance difficulties with certain items of STANO equipment in the field at night. The following questions need to be answered only a few times in order to indicate the items of night equipment which may cause operational difficulties. These questions should be answered during individual or unit training, prior to the test.

6.10.1 Which controls could not be manipulated with a gloved hand?

6.10.2 Which controls did the operator have difficulty identifying before he used them?

6.10.3 Which controls were placed on the equipment in such a manner that they could not be comfortably manipulated by either hand?

6.10.4 Which controls did not sufficiently control the particular function of the equipment for which they were provided?

6.10.5 Which controls that are associated with equipment displays did not have a clear and adequate control/display relationship?

6.10.6 Which controls that are associated with equipment displays do not have acceptable positioning tolerance?

6.10.7 Could the operator make the correct decisions from the information given to him by control position?

6.10.8 How many times did the operator report incorrect data to other individuals in the system?

6.10.9 On which items of equipment are access openings not rounded or protected to prevent personnel injury?

6.10.10 Where applicable on which items are audible warning signals not distinctive and likely to be obscured by other noises?

6.10.11 On which equipment are critical warning lights not isolated from other less important lights for best effectiveness?

6.10.12 On which equipment are stop limits not provided on drawers or fold-out assemblies?

6.10.13 On which equipment are components not located and mounted so that use of or access may be achieved without danger to personnel?

6.10.14 Which equipment does not have clearly required safety features?

6.10.15 On which equipment are openings not labeled to indicate what can be reached?

6.10.16 Does the equipment exhibit high degree of interchangeability to facilitate maintenance in the field?

6.10.17 In which equipment are lubricants used that are not in the Federal Supply System?

6.10.18 In which equipment are adequate lubrication instructions provided that identify the frequency and type of lubricants required?

6.10.19 In those instances of a generator stoppage, was the operator unable to regain power within 10 minutes?

6.10.20 For those items requiring a vehicular power supply, was the operator required to perform additional maintenance tasks?

6.10.21 How many questions were asked by the operator concerning the user maintenance of the device?

6.10.22 Was the operator as alert and capable the last half hour as he was the first half hour of operating the device?

ANNEX E TO PART I - STANO II TEST
TEST EQUIPMENT

TEST EQUIPMENT

1. (U) General. This annex present a listing and discussion of the STANO equipment to be used in the test. The equipment has been divided into four (4) categories: TOE STANO Equipment, SEA NITEOPS Equipment, STANO Supporting Equipment and Unattended Ground Sensors.

2. (C) Test Equipment.

a. TOE STANO Equipment. These devices are presently standardized and included in applicable Tables of Organization and Equipment (TOE). However, because such limited quantities have been issued to CONUS units, it has been necessary to procure the equipment required on a special 180 day loan basis from the National Inventory Control Point at ECOM, Philadelphia, Pennsylvania. Disposition instructions will be issued at the termination of this 180 day period by DA, ODCSLOG.

	ITEM	QUANTITY REQUIRED
(1)	Binocular, Electronic, T-7 (AN/PAS-5) w/IR headlight filter kit	128
(2)	Binocular, M-18 (Hand Held)	9
(3)	Metascope Assembly, Image Infrared Transistorized (AN/PAS-6)	28
(4)	Metascope Kit for M48A3 Tank M17 Range Finder	5
(5)	Night Vision Sight, Individual Served Weapon (AN/PVS-2)	67
(6)	Hand Held Intensifying Telescope (AN/PVS-3) (MINISCOPE) w/mount	15
(7)	Night Vision Sight, Crew Served Weapon (AN/TVS-2)	16
(8)	Night Vision Sight, Tripod Mounted (AN/TVS-4)	10

ITEM	QUANTITY REQUIRED
(9) Searchlight, Infrared (AN/MSS-3) Pink Filter	2
(10) Searchlight, Infrared (AN/VSS-2) Pink Filter	5
(11) Surveillance Radar (NA/PPS-5)	3

b. SEA NITEOPS Equipment List.

ITEM	QUANTITY REQUIRED
(1) Binocular, Electronic SU-50	50
(2) Aiming Light (Firing and Aiming Device, IR)	35
(3) Viewer, Infrared AN/PAS-7	10
(4) Man-Packed Surveillance Radar AN/PPS-9	10
(5) Night Vision Sight, Tripod Mounted AN/TSS-7 (NOD-LR)	2
(6) Supplementary Visible/Infrared Vehicular Searchlight (SVS) AN/VSS-3 mounted on M113 APC	4
(7) Airborne Searchlight AN/ASS-2	2

c. STANO Supporting Equipment. Many of the STANO items will require installation in or mounting on a vehicle or a weapons system. Certain vehicles will have to be made available prior to the conduct of the test so that necessary modifications can be made. It is assumed that full modification kits (k.e., mounting brackets, etc.) will be supplied with the STANO items to be installed. The following are the major items of equipment which will be required for the employment of STANO systems based upon SEA NITEOPS equipment availability. All of this STANO supporting equipment is to be provided by USAMC.

(1) Supplementary Vehicular Searchlight (1KW). Four (4) 1KW searchlights will be installed on four (4) M113 APC.

(2) Searchlight, Infrared, Pink Filter (AN.VSS-2). One of these 2.2KW 23 inch Xenon searchlights will be mounted on each of the five (5) M48A3 tanks requested.

(3) Searchlight, Infrared (AN/MSS-3). Two (2) of these searchlights will be mounted on ¼ ton trucks.

(4) <u>Total Quantity for STANO Supporting Equipment</u>

UH-IH Helicopter	2
M113 APC	4
M48A3 Tank	5
¼ ton Truck	2

d. Unattended Ground Sensors. Listed below are the requirements for unattended ground sensors and related equipment to support the field test. Special procurement of these items to include operating frequencies has been initiated. The full nomenclature and a description of each of the sensor items is included in Appendix 3.

	ITEM	QUANTITY
(1)	MINI-HANDSID	14
(2)	MAGID	3
(3)	PIRID	3
(4)	GSID	9
(5)	ADSID	32
(6)	ACOUSID II	16
(7)	ARFBUOY	2
(8)	NBB	200
(9)	PORTATALE	12
(10)	Ground Relay (SARS)	1

(11) Tethered Balloon Antenna 1

4. (U) <u>Description and Employment of STANO Test Equipment</u>. Appendices 1 through 3 contain a description of the TOE STANO Equipment, the SEA NITEOPS Equipment, and the Unattended Ground Sensors to be employed in the STANO II - Part I.

Appendix 1 - TOE STANO Equipment

Appendix 2 - SEA NITEOPS Equipment

Appendix 3 - Unattended Ground Sensors

DISTRIBUTION:
Same as basic plan

TOE STANO EQUIPMENT

1. PURPOSE: This appendix contains a brief description and employment of the TOE STANO Equipment to be tested during the field test.

2. TOE STANO EQUIPMENT:

a. Binocular, Electronic T-7

(1) Characteristics. The T-7 is a light weight, head-mounted, short range, infrared viewing device used premarily for night driving. It is most commonly used in conjunction with IR filters placed over vehicular headlights. Its effective viewing range is approximately 50 meters.

(2) Employment. The T-7 infrared binocular is used primarily by drivers of tanks, APC and trucks. It can be used with any infrared light source for night tasks requiring visual security, binocular vision and freedom of movement. It is head-mounted, leaving the hands free for tasks other than driving such as equipment operation and construction.

b. Binocular, M-18 (Hand Held)

(1) Characteristics. The M-18 Binocular is a hand held, 3.5 magnification, infrared binocular developed as a part of the M60 tank night vision kit and in that role depends on the infrared mode of the tank searchlight for illumination. It has a 12 degree field of view and an effective viewing range of 1000 meters. It requires a 1.5 volt mercury battery as a power source.

(2) Employment. The M-18 is a part of the tank night vision kit. It permits secure open hatch operation by the tank commander. It has a central lay pattern reticle, and therefore can also be used for adjustment of fire on targets. Although it was designed as a part of the tank kit, the binoculars can be used with any infrared light source for observation with relative visual security. In the searchlight test entitled "Tactical Test, Illumination" conducted by the USA Artillery and Missile School at Fort Sill in May 1968, it was found that the M-18 binoculars could be used very effectively in aerial observation. These binoculars should be issued for use in conjunction with the searchlights to be evaluated in the test. They will be issued to infantry and armored cavalry units.

c. Metascope Assembly, Image Infrared Transistorized (AN/PAS-6)

(1) Description. This image forming metascope is a light weight, hand held, near infrared viewing device equipped with a small accessory infrared light source. The metascope, which uses a single stage image converter tube, is powered by a small mercury battery. This multipurpose viewer is capable of detecting enemy infrared light sources at ranges of several miles. When used with high intensity infrared light sources, such as the Xenon searchlight its useful viewing range is greatly extended. It has an approximate range of 25-50 meters with its own light source and weighs 2 pounds.

(2) Employment. The metascope is issued to all units as a TOE item. It may be used in such tasks as map reading, marking positions for friendly aircraft equipped with infrared detecting devices, or for detecting other infrared emitting devices. A metascope without light source is attached to the M17 range finder to be used in conjunction with the 2.2KW Xenon searchlight mounted on the M48A3 tank. The metascope, without its own light source, is included with the jeep mounted 2.2KW searchlight, infrared.

d. Night Vision Sight, Individual Served Weapon (AN/PVS-2)

(1) Description. The Night Vision Sight, Individual Served Weapon (Starlight Scope), is a portable, battery-powered, electro-optical instrument for passive visual observation and aimed fire of weapons at night. It uses the ambient light (moonlight and/or starlight) of the night sky for illumination. This radiation is reflected, imaged and intensified by a three-stage image intensification tube. Since it does not project a visible or infrared light, this scope is a passive device offering freedom from possible enemy detection. The device weighs approximately 6 pounds and is powered by a self-contained 6.75 volt battery and has a range of approximately 400 meters.

(2) Employment. The starlight scope is designed for employment on the M14, M14A1, and M16E1 rifles, the M60 machinegun, the 40mm grenade launcher M79, the 66mm rocket launcher M72, and the 90mm recoilless rifle M67. It is capable of employment as a hand held viewer or weapon mounted sight. Its use at night permits weapons accuracy comparable to that obtained with the weapon in daylight using the conventional sight. It may also be used as a hand held viewer by commanders, reconnaissance units, and personnel engaged in offensive and defensive operations.

e. Hand Held Intensifying Telescope (AN/PVS-3) (MINISCOPE)

(1) Description. The miniscope is a light weight, hand held, passive, night vision telescope. It weighs 3 pounds, is 4 power,

and amplifies ambient night light to a level which permits night observation of a man size target at approximately 300 meters.

(2) Employment. The miniscope is a night vision device for visual observation and aimed fire of weapons at night. It is capable of being employed as a hand held viewer or weapon mounted sight on basic infantry weapons. It will be employed in the same manner as the starlight scope with emphasis on the hand held surveillance capability.

f. Night Vision Sight, Crew Served Weapon (AN/TVS-2)

(1) Description. The Night Vision Sight, Crew Served Weapon is a battery powered, electro-optical device for observation and aimed fire of crew served weapons at night. The sight is a passive instrument which uses the ambient light (moonlight and/or starlight) of the night sky for target illumination. Since it does not project infrared or visible light, it offers freedom from the possibility of enemy detection. It uses the same image intensification tube as the night vision sight, individual served weapon (Starlight Scope). It achieves its greater passive viewing range (800-1000) meters by use of a larger objective lens assembly. The sight weighs 16 pounds (with mount) and has a field of view of 5.6 degrees.

(2) Employment. The crew served weapons sight is primarily designed for employment on the caliber .50 machine gun and the 106mm recoilless rifle (each sight is provided with these two mounts).

g. Night Vision Sight, Tripod Mounted (AN/TVS-4)

(1) Description. The Night Vision Sight, Tripod Mounted is a passive viewing device which utilizes the same principle of intensification as the Starlight Scope and Crew Served Weapons Sight. The intensification tube diameter is increased and a larger objective lens assembly is used. The range is 1200 meters with a field of view of 9 degrees. This range can be extended by the use of artificial light, i.e., illuminating shells and searchlights. The sight weighs 38 pounds.

(2) Employment. The Night Vision Sight, Tripod Mounted is a ground mounted, medium range, passive night surveillance and target acquisition device, primarily for use on observation posts. It is also employed on patrols within the limit of its portability, and used both in offensive and defensive operations. It enables the user to detect, locate and identify enemy targets during darkness. It may also be used to complement other surveillance means such as radars.

h. Searchlight, Infrared (AN/MSS-3) (Pink Filter)

(1) Characteristics. This set is a jeep mounted, 23 inch, 2.2KW Xenon searchlight which can produce either white or infrared light. It has a peak beam candlepower of 75 million and has two beam spreads 1.2 degrees or 7 degrees. It is mounted on a ¼ ton truck. It has an effective range out to 5,000 meters.

(2) Employment. For the purposes of the test a searchlight section consisting of two (2) 23 inch jeep mounted searchlights will be included as part of the proposed Battalion Ground Surveillance Platoon. Using white light illumination, the searchlight can be used in a direct mode to illuminate an area of the battlefield or fixed on a specific target to assist in bringing effective fire to bear. The illumination can be especially useful to forward observers for adjustment of fire. White light illumination can also be used in indirect illumination. This type illumination has the advantage that it improves the ability of every soldier to see without using special equipment. It has the disadvantage that it allows the enemy the same improved visibility and in some cases may silhouette our forces. Searchlights can be used in a diffused indirect mode to supplement the available ambient light so as to maintain the light level at an optimal level for operation of image intensifiers. Reflecting light off cloud cover (when present) is an especially effective technique. Infrared illumination can be used with infrared sensors such as the M18 binoculars and image intensifiers. Only devices with an infrared capability are directly assisted by the illumination.

i. Searchlight, Infrared Pink Filter (AN/VSS-2)

(1) Characteristics. This set is a tank mounted, 23 inch, 2.2KW Xenon searchlight which can produce either white or infrared light. It has a peak beam candlepower of 75 million and has two beam spreads, one from 0.5 to 0.75 degrees and the other of 7.0 degrees. In the infrared mode it is used in conjunction with the M18 binoculars.

(2) Employment. This searchlight can be mounted on the M41A3, the M60, and the M48A3 tanks. The machine guns and main tank weapon can be aimed and fired in conjunction with the searchlight beam in either the white light or infrared mode. The searchlights can be employed in perimeter defense usually in the IR mode. For this test, five (5) of the searchlights are to be mounted on M48A3's.

j. Surveillance Radar (AN/PPS-5)

(1) Characteristics. The AN/PPS-5 radar set is a light weight,

sturdy, portable, pulse doppler radar for detecting and locating moving ground targets, whether vehicles or troops. It can pick up targets between the ranges of 50 to 10,000 meters. Target detection display is duplicated both audibly and visually. The visual display (A and B scopes) is in an indicator unit which can be operated by remote control up to 50 feet from the radar, providing a measure of security for the operator.

(2) Employment. This radar system provides a relatively light weight, ground-to-ground surveillance radar for use in the forward battle area. It may be used alone as a surveillance device or to complement other radars and night observation devices.

3. Tab A outlines how the total requirements for TOE STANO equipment were derived.

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TAB:
A - TOE STANO Equipment Totals

TOE STANO EQUIPMENT TOTALS

The table below outlines how the total TOE STANO Equipment requirements were derived:

EQUIPMENT ITEM	a Quantity Required for Test Troops	b Quantity Required for Data Collectors and Controllers	c Special 10% Test Maintenance Float	Total
(1) Binocular, Electronic, T-7 (AN/PAS-5) w/IR Headlight Filter Kit	62	54	12	128
(2) Binocular, M-18 (Hand Held)	9			9
(3) Metascope Assembly, Image Infrared Transistorized (AN/PAS-6)	12	13	3	28
(4) Metascope Kit for M48A3 Tank M17 Range Finder	5			5
(5) Night Vision Sight, Individual Served Weapon (AN/PVS-2)(Starlight Scope)	24	37	6	67
(6) Hand Held Intensifying Telescope (AN/PVS-3) (Miniscope)	13		2	15
(7) Night Vision Sight, Crew Served Weapon (AN/TVS-2)(CSWS)	14		2	16
(8) Night Vision Sight, Tripod Mounted (AN/TVS-4)(NOD-LR)	9		1	10
(9) Searchlight, Infrared (AN/MSS-3), Pink Filter, ¼ ton Truck mounted	2			2

EQUIPMENT ITEM	a	b	c	Total
(10) Searchlight, Infrared (AN/VSS-2), Pink Filter, M48A3 Tank mounted	5			5
(11) Surveillance Radar (AN/PPS-5)	2		1	3

DISTRIBUTION:
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SEA NITEOPS EQUIPMENT

1. PURPOSE: This appendix outlines the SEA NITEOPS Equipment to be tested during the field test.

2. SEA NITEOPS EQUIPMENT:

a. The SEA NITEOPS Equipment package consists of seven (7) devices or systems which will be supported by NOTTS teams during the test.

b. A brief description of the characteristics of the device and its proposed employment is provided for each of these items in Tabs A through G. A picture, or artists conception of each devices has also been attached.

TABS
A - Night Vision Goggles
B - Aiming Light
C - Short Range Hand Held Viewer
D - Man-Packed Surveillance Radar (AN/PPS-9)
E - Night Observation Device Long-Range
F - Supplementary Vehicular Searchlight
G - Airborne Searchlight

DISTRIBUTION:
Same as basic plan

Figure E-1. (U) Night Vision Goggles (U)

Tab A to APPENDIX 2 to ANNEX E to PART I - STANO II TEST
NIGHT VISION GOGGLES

NIGHT VISION GOGGLES

1. (U) PURPOSE: This tab contains a brief description and employment of the Night Vision Goggles (NVG).

2. (C) DESCRIPTION: The Night Vision Goggles are a passive, head-mounted, unity magnification, image intensification device. This device provides for a multipurpose, head-mounted image intensification viewer designed to allow freedom of both hands. Non-stabilized binocular self-powered 18mm second-generation light-amplification sensors will be mounted in a strap-on headset. Personnel targets can be detected at 50 meters in starlight or at 100 meters in moonlight. The device can also provide a miniature light source for close-in-viewing. The weight is approximately one and one-half pounds.

3. (C) EMPLOYMENT: The Night Vision Goggles are designed to provide the individual soldier greater mobility and better performance of tasks during darkness. When the ambient light level is inadequate, a supplemental built-in illuminator is provided to permit close-in viewing. It is envisioned that the goggles will be used in many individual tasks such as driving, map reading, maintenance, medical work and controlling maneuver elements as it will permit arm and hand signals to be used by commanders and platoon and section leaders.

DISTRIBUTION:
Same as basic plan

Figure E-2. (C) Aiming Light (U)

TAB B to APPENDIX 2 to ANNEX E to PART I - STANO II TEST
AIMING LIGHT

AIMING LIGHT

1. (U) PURPOSE: This tab contains a brief description and employment information on the infrared Aiming Light.

2. (C) DESCRIPTION: This device is a small infrared light source which is mounted on and boresighted with an M14 or M16 rifle. It is to be used in conjunction with the Night Vision Goggles.

3. (C) EMPLOYMENT: This device enables a firer wearing Night Vision Goggles to bring effective and accurate fire to bear on a target. The IR light source emits a narrow beam of light. This beam has been boresighted with the weapon. The rifleman fires when he has placed the dot of IR light on target. This device will be utilized during the live fire portions of the test in comparative analysis with rifles equipped with miniscopes, starlight scopes, and rifles with no special equipment.

DISTRIBUTION:
Same as basic plan

Figure E-3. (U) Short Range Hand-Held Viewer (U)

TAB C TO APPENDIX 2 TO ANNEX E TO PART I - STANO II TEST
SHORT RANGE HAND-HELD VIEWER

SHORT RANGE HAND-HELD VIEWER

1. (U) PURPOSE: This tab contains a brief description and employment of the Short Range Hand-Held Viewer.

2. (C) DESCRIPTION. The Short Range Hand-Held Viewer is a battery operated, thermal imaging passive type device. The non-stabilized far infrared imaging system will be mounted in a hand-held monocular viewer and will use a belt-mounted power supply. An infrared scanner sensor collects the battlefield-emitted radiation and converts the information into a real-time display, including indications of relative azimuth and elevation of objects. Standing personnel targets can be recognized at 50 meters. The field of view is 12^{o} horizontal x 6^{o} vertical. The weight is approximately 11 pounds including the power source.

3. (C) EMPLOYMENT. The viewer is designed to provide a hand-held thermal detection and imaging device to detect and recognize personnel targets at short ranges from a real-time display. It will be utilized by patrols for ambush detection, and employed by squad and fire team leaders when the ambient light is insufficient to permit the functioning of intensification type devices.

DISTRIBUTION:
Same as basic plan

Figure E-4. (U) Man-Packed Surveillance Radar AN/PPS-9 (U)

TAB D TO APPENDIX 2 TO ANNEX E TO PART I - STANO II TEST
MAN-PACKED SURVEILLANCE RADAR (AN/PPS-9)

MAN-PACKED SURVEILLANCE RADAR (AN/PPS-9)

1. (U) PURPOSE: This tab contains a brief description and employment of the Man-Packed Surveillance Radar AN/PPS-9.

2. (C) DESCRIPTION. The AN/PPS-9 Radar is a hand-held, light weight ground surveillance radar designed for the detection of moving personnel and vehicles. It is a solid-state, integrated-circuit radar employing automatic azimuth scanning and providing an aural target indication. The system, including the receiver/transmitter unit, mounting tripod, angular scan assembly, headset, and batteries, will weigh ten pounds and have a range of 2,000 meters for a moving vehicle and 1,000 meters for a walking man.

3. (C) EMPLOYMENT. This radar is designed for use in the forward battle area in situations where other radar sets such as the AN/PPS-4 or AN/PPS-5 are too large and heavy. It will provide a surveillance capability to units during limited visibility. It will be utilized by patrols, outposts, observation and listening posts and other units as required. Primarily designed as a ground mount radar, it does have the capability of being mounted in armored scout vehicles.

DISTRIBUTION:
Same as basic plan

Figure E-5. Night Observation Device-Long Range (U)

TAB E TO APPENDIX 2 TO ANNEX E TO PART I - STANO II TEST
NIGHT OBSERVATION DEVICE - LONG RANGE

NIGHT OBSERVATION DEVICE - LONG RANGE

1. (U) PURPOSE: This tab contains a brief description and employment of the Night Observation Device - Long Range (NOD-LR).

2. (C) DESCRIPTION. The Night Observation Device - Long Range (1½ Gen) is a direct view image intensification device which will operate passively (ungated and without illumination) at ranges up to 1,000 meters, and actively as a pulsed/gated device to ranges of 2,500 meters. Active operation of this device will provide ranging capabilities, and some haze, fog and smoke penetration. In the active mode, a 40mm three-stage 5-20 image intensifier tube will be synchronously gated with a pulsed invisible gallium arsenide (GaAs) laser. Recognized targets can be designated by a laser, or fire control information can be provided to forward air controllers by radio, using azimuth, elevation and range finding functions incorporated into the system. Vehicular targets can be detected at a range of 2,500 meters in the active mode or 1,500 meters in the passive mode. The weight of the device is 120 pounds, which is broken down into three 40 pound packs.

3. (C) EMPLOYMENT. This device provides an improved long range, manportable ground surveillance system which will enable a ground observer to detect and recognize ground targets from a real-time display and designate targets to ground and airborne troops with a laser designator and/or relate target information to a forward air controller. It provides a ground mounted, long range, night surveillance and target acquisition device, primarily for use on observation posts. It is used in both offensive and defensive operations. It can be used to complement other surveillance means such as radars.

DISTRIBUTION:
Same as basic plan

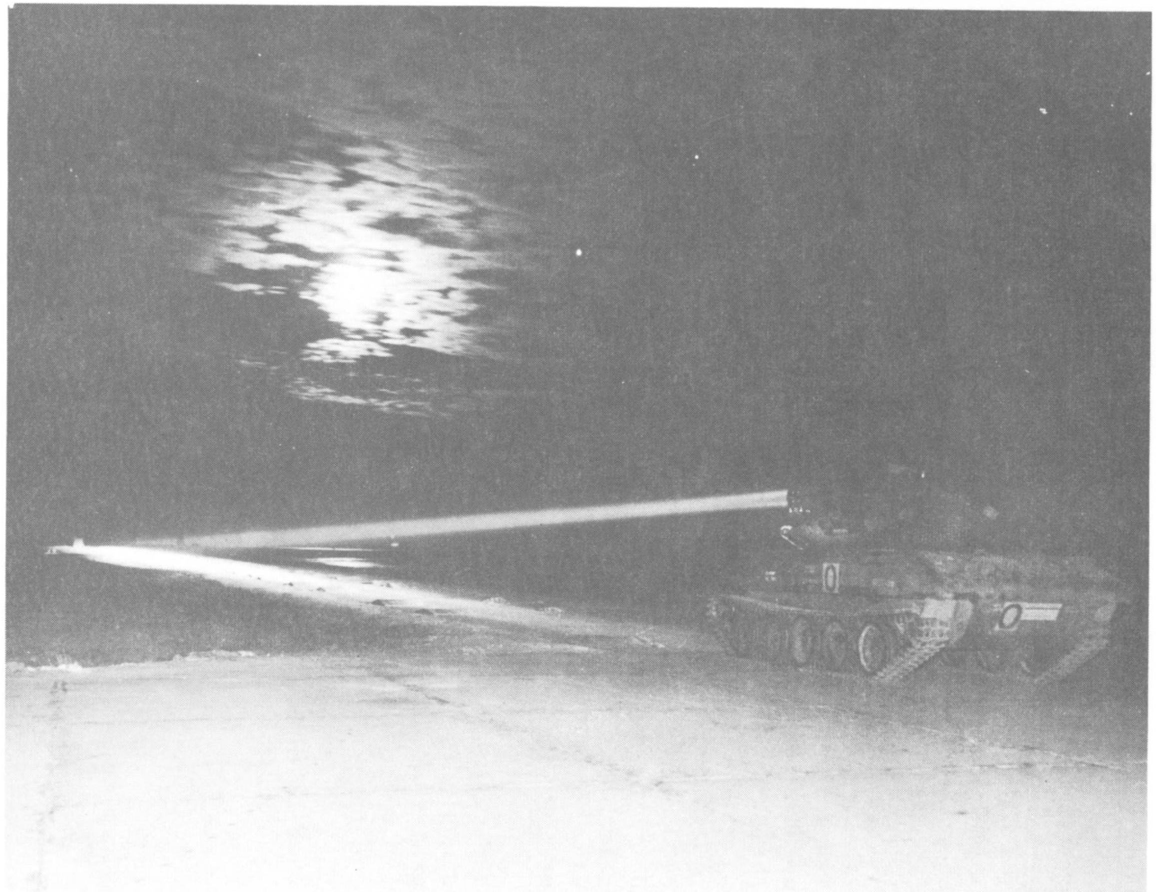


Figure E-6. (U) Supplementary Vehicular Searchlight (U)

TAB F TO APPENDIX 2 TO ANNEX E TO PART I - STANO II TEST
SUPPLEMENTARY VEHICULAR SEARCHLIGHT

SUPPLEMENTARY VEHICULAR SEARCHLIGHT

1. (U) PURPOSE: This tab contains a brief description and employment of the Supplementary Vehicular Searchlight.

2. (C) DESCRIPTION: The Supplementary Vehicular Searchlight is a visible/infrared searchlight for vehicular mounting. It is a 1 KW xenon searchlight capable of producing 50 million peak-beam candlepower, with a 1 degree and 7 degree beam spread. It is primarily designed for mounting on the M113 APC, and the M551 and M48A3 tanks. The light is designed to operate in either a white light (visible) mode or a near infrared "pink" (invisible) mode when the remote controlled infrared filter is inserted. Illumination will be sufficient to enable detection of a vehicular target at 1,000 meters using such devices as the crew served weapons sight or XM-44 periscope when operating in the invisible mode, or at 1,500 meters using such devices as the M119 telescope when operating in the visible mode.

3. (C) EMPLOYMENT. The Supplementary Vehicular Searchlight will provide a visible and infrared light source for battlefield illumination and extending the range of image intensifier type viewers. When used by a tank section in the infrared mode, it should be employed in conjunction with the M18 binoculars for target acquisition and adjustment of fire. In the white light mode, the searchlight is employed in the conventional manner, except that its light can enhance the ability to use image intensifier devices.

DISTRIBUTION:
Same as basic plan

Figure E-7. (U) Airborne Searchlight (U)

TAB G TO APPENDIX 2 TO ANNEX E TO PART I - STANO II TEST
AIRBORNE SEARCHLIGHT

AIRBORNE SEARCHLIGHT

1. (U) PURPOSE: This tab contains a brief description and employment of the Airborne Searchlight.

2. (C) DESCRIPTION. The Airborne Searchlight is a high intensity searchlight capabile of providing illumination of approximately 8 times moonlight level over an 11 million square foot area, from a height of 6,000 feet. This self-contained illumination system, palletized for quick installation in UH-1C, UH-1D, or CH-47 helicopters, will use a pre-focused xenon or krypton-filled plasma arc source to provide 1.5 million lumens at a power input (from its own generator) of 30 KW for continuous operation of up to 2½ hours duration. Weight of the device will be approximately 550 pounds. The device will also have a "Pink Filter" capability.

3. (C) EMPLOYMENT. The airborne searchlight will be used to provide illumination of areas to assist maneuver elements in the conduct of offensive, defensive and security operations. It can be used to provide illumination of landing zones for the conduct of airmobile assaults, and to facilitate the employment of armed helicopters and other aerial fire support means. Proper use of the airborne searchlight can extend the range of aerial and ground passive night vision devices by increasing the ambient light level through the use of the "Pink Filter" technique.

DISTRIBUTION:
Same as basic plan

APPENDIX 3 TO ANNEX E TO PART I - STANO II TEST
UNATTENDED GROUND SENSORS

UNATTENDED GROUND SENSORS

1. PURPOSE: This appendix contains a brief description of the unattended ground sensors and radio frequency (RF) relay systems to be used in the STANO II Part I Test.

2. UNATTENDED GROUND SENSORS: Tabs A through J provide a brief description of the sensors and RF relay systems to be used in the STANO II Part I Test.

Tabs:
A--Ground Emplaced Seismic Intrusion Detector
B--Miniaturized Hand Emplaced Seismic Intrusion Detector
C--Magnetic Instrusion Detector
D--Air Delivered Seismic Intrusion Detector
E--Passive Infrared Intrusion Detector
F--Acoustic and Seismic Intrusion Detector II
G--Automatic Radio Frequency Buoy/Noiseless Button Bomblet
H--Radio Frequency Monitor Set AN/USQ-42
I--Tethered Balloon Antenna for AN/USQ-42
J--Sensor Analogue Relay System

DISTRIBUTION:
Same as basic plan

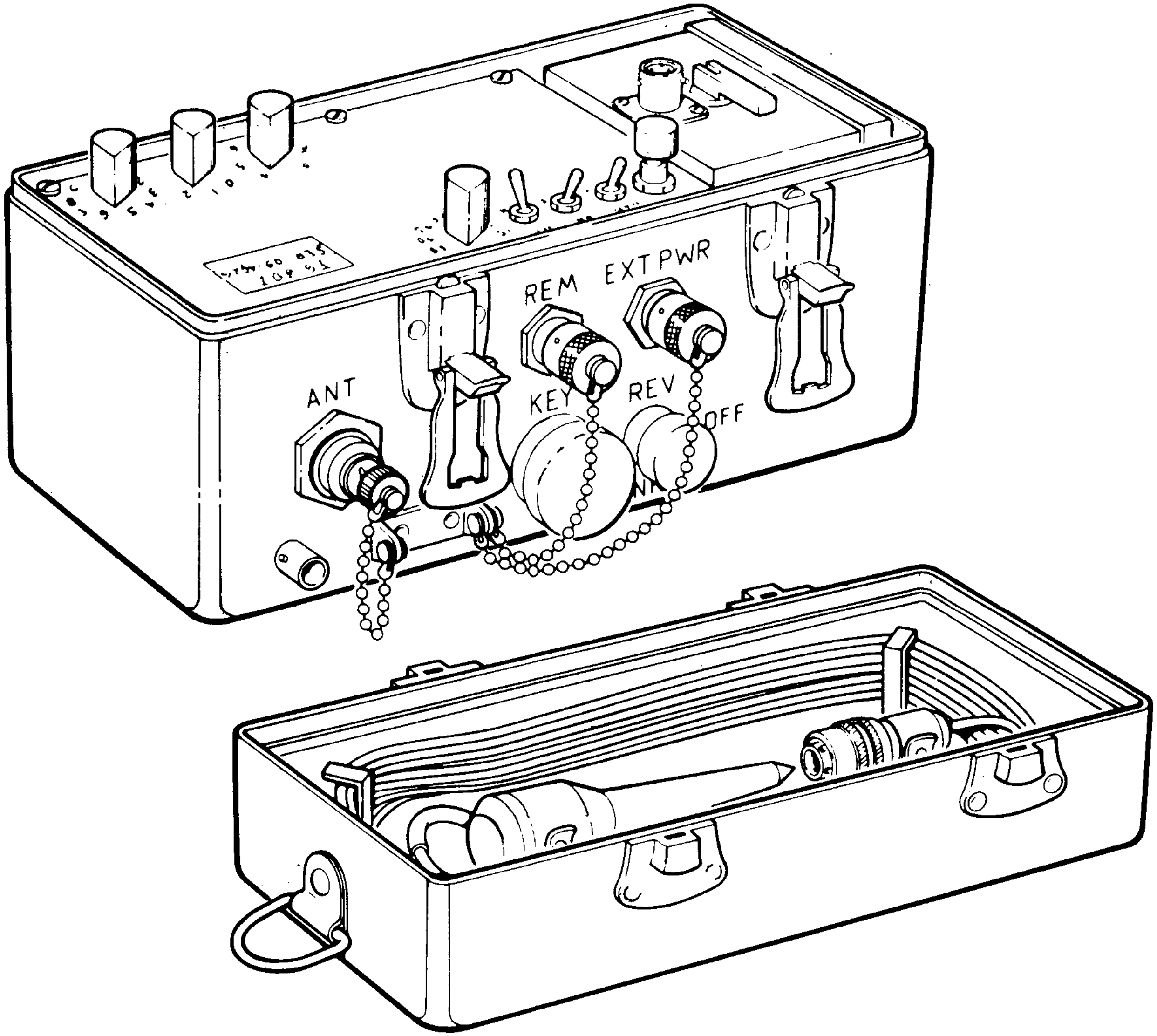


Figure E-8. Ground Emplaced Seismic Intrusion Detector (U)
A-3-E-1

GROUND EMPLACED SEISMIC INTRUSION DETECTOR

1. PURPOSE: This tab provides a brief description of the Ground Emplaced Seismic Intrusion Detector (GSID).

2. DESCRIPTION:

a. The GSID is a small, light weight (6 lbs) seismic detector that is hand-emplaced. The unit is approximately 4" X 4" X 8" in size.

b. With the cover open, access is provided to an ON/OFF switch, real time/inhibit mode selector switch, gain setting switch, code selection switches to select any of the 27 tone codes, battery component, and external geophone and cable storage. The external geophone can be implanted up to ten meters from the GSID allowing additional elevation for better RF transmission range.

c. When emplaced, the disable system can be armed if it is desired to activate the anti-tamper feature. No timer is provided and the battery can be replaced if desired when the anti-tamper feature is not used.

DISTRIBUTION: Same as basic plan

Figure E-9 . Miniaturized Hand Emplaced Seismic Intrusion Detector (U)

MINIATURIZED HAND EMPLACED SEISMIC INTRUSION DETECTOR

1. PURPOSE: This tab provides a brief description of the Miniaturized Hand Emplaced Seismic Intrusion Detector (MINI-HANDSID).

2. DESCRIPTION: The MINI-HANDSID is a hand-emplaced seismic intrusion detector which provides warning of intrusion without the intruder being alerted. It is designed for a detection range of 20-40 meters for personnel and 300 meters for vehicles, with a false alarm rate of less than two per hour and with a 90 percent probability of detection. The service life of the MINI-HANDSID batteries is approximately 45 days. After arming, any tampering will activate the self-destruct feature which is built into the set. Through manipulation of a plug prior to activation, the destruct mechanism can be rendered inactive, and it is possible to recover and reuse the device in other locations. A seismic disturbance will transmit a coded signal on a predesignated frequency to the receiver. Tests have shown that a ground-to-ground line of site signal can be detected for 6 to 10 kilometers under ideal conditions. The MINI-HANDSID is employed buried in the ground so that only the antenna appears above the surface. This device must be hand-emplaced by patrols.

DISTRIBUTION: Same as basic plan

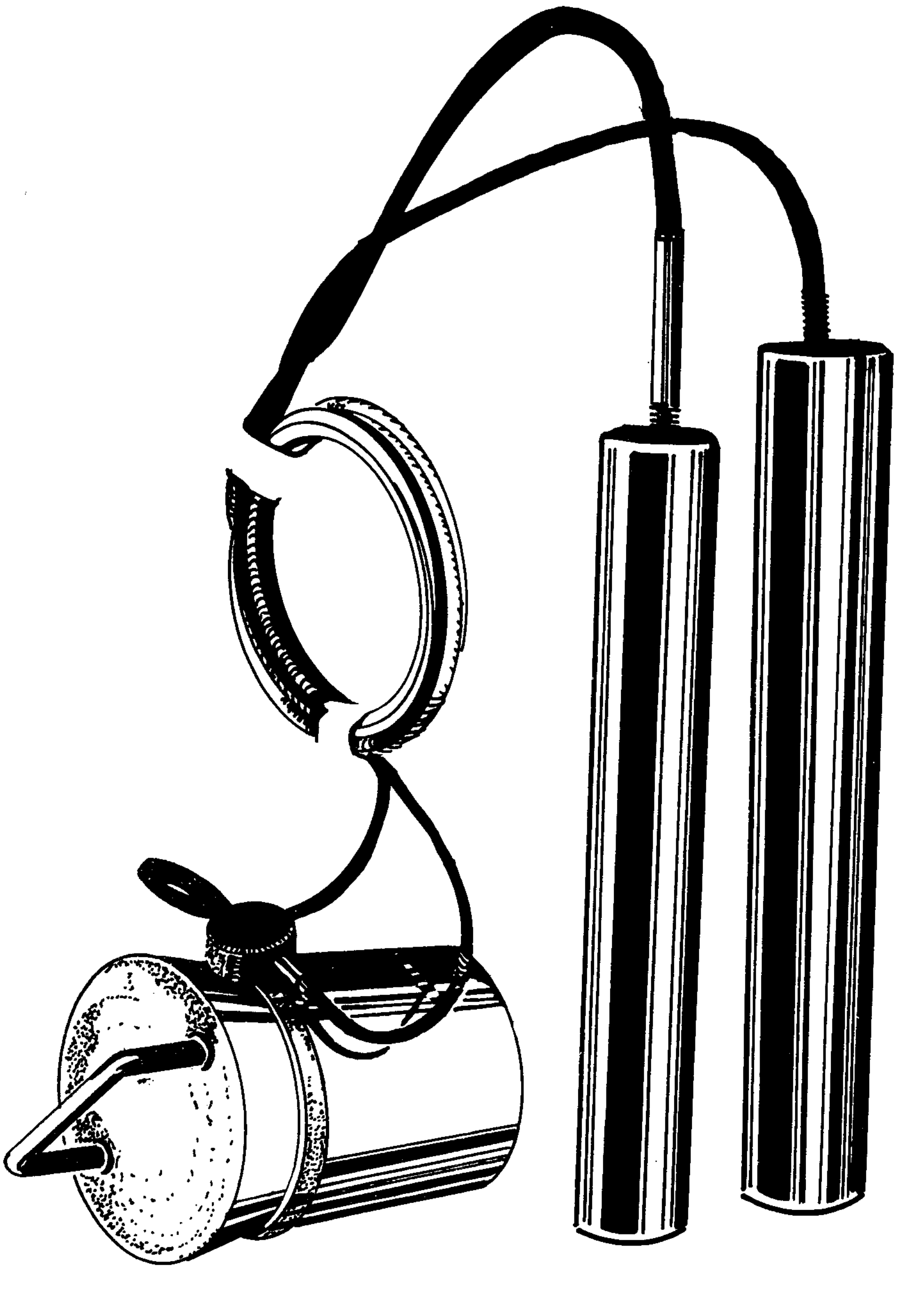


Figure E-10. Magnetic Intrusion Detector (U)

MAGNETIC INTRUSION DETECTOR

1. PURPOSE: This tab provides a brief description of the Magnetic Intrusion Detector (MAGID).

2. DESCRIPTION:

a. The MAGID is a magnetic sensor which consists of two pick-up solenoids, 1½ inches in diameter by 12 inches long, weighing 2 pounds, and a detector unit 5 inches in diameter by 8 inches long, weighing 9 pounds. The pick-up solenoids are connected to the detector unit with 7 foot, two conductor, armored cables and when implanted are 14 feet apart. The detector unit is connected to the MINI-HANDSID with a 100 foot twisted shielded cable. The MAGID detects the magnetic field associated with moving ferrous implements such as rifles or entrenching tools. Detection range for personnel carrying a rifle is 3-4 meters and for moving vehicles is 20-25 meters.

b. The unit is hand-emplaced and is normally dug into the ground to avoid enemy detection of the unit. Signals are transmitted from the MINI-HANSID set in "external only" mode at intervals of one per 0.5 seconds whenever moving ferrous materials are detected.

c. The MAGID can only be used with a HANSID and the MINI-HANSID since it is a satellite sensor without its own transmitter.

DISTRIBUTION: Same as basic plan

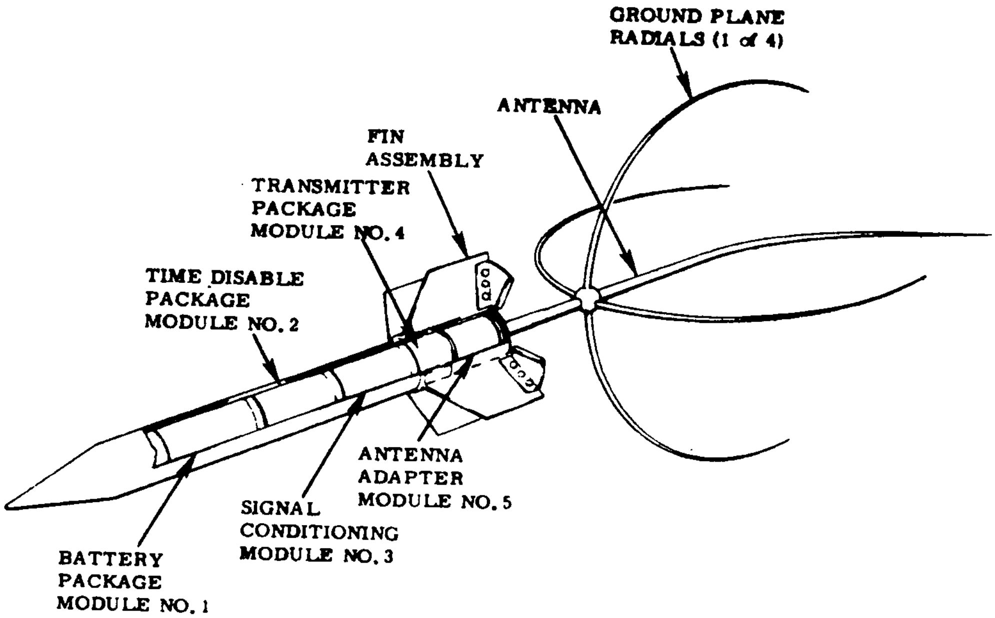


Figure E-11. Air Delivered Seismic Intrusion Detector (U)

TAB D TO APPENDIX 3 TO ANNEX E TO PART I - STANO II TEST
AIR DELIVERED SEISMIC INTRUSION DETECTOR

AIR DELIVERED SEISMIC INTRUSION DETECTOR

1. PURPOSE: This tab provides a brief description of the Air Delivered Seismic Intrusion Detector (ADSID).

2. DESCRIPTION:

a. The ADSID is an aircraft-delivered, ballistic penetration, electronic device used to detect and locate enemy personnel and vehicles by detection of earth vibrations caused by their activity. The detection capability is similar to the MINI-HANSID. Present CEP for aerial emplacement is 200 meters.

b. When dropped, the device should properly implant itself in the ground at a vertical ± 30 degrees. Later models will be increased to ± 45 degrees. After impact, a preset timer will activate the detection circuitry. The ADSID can be dropped from a high performance aircraft or hand dropped from a helicopter. The minimum drop altitude is 900 feet.

c. The camouflage painted ADSID weighs 25 pounds and is cylindrically shaped, 3 inches in diameter and 31 inches long with a conical nose. A fin assembly stabilizes it in flight so that a predictable trajectory is possible. The fins also act as terrabrakes to control sensor ground penetration in soft earth. A flexible antenna with 4 ground plane radials protrude from the aft end of the fin assembly.

d. The mercury cell battery pack has a shelf life of 30-45 days but in operation this may vary from 2 to 62 days depending on the mode of operation and the level of activity. The activation time can be set from 1-45 days to permit limited or maximum utilization. The inhibit mode is preferred as it uses less power and gives adequate activation signals.

e. The ADSID can be disabled by the timer, battery run-down, or the tilt switch when improperly implanted or physically disturbed. The diodes and resistors of the sensor will be destroyed automatically.

DISTRIBUTION: Same as basic plan

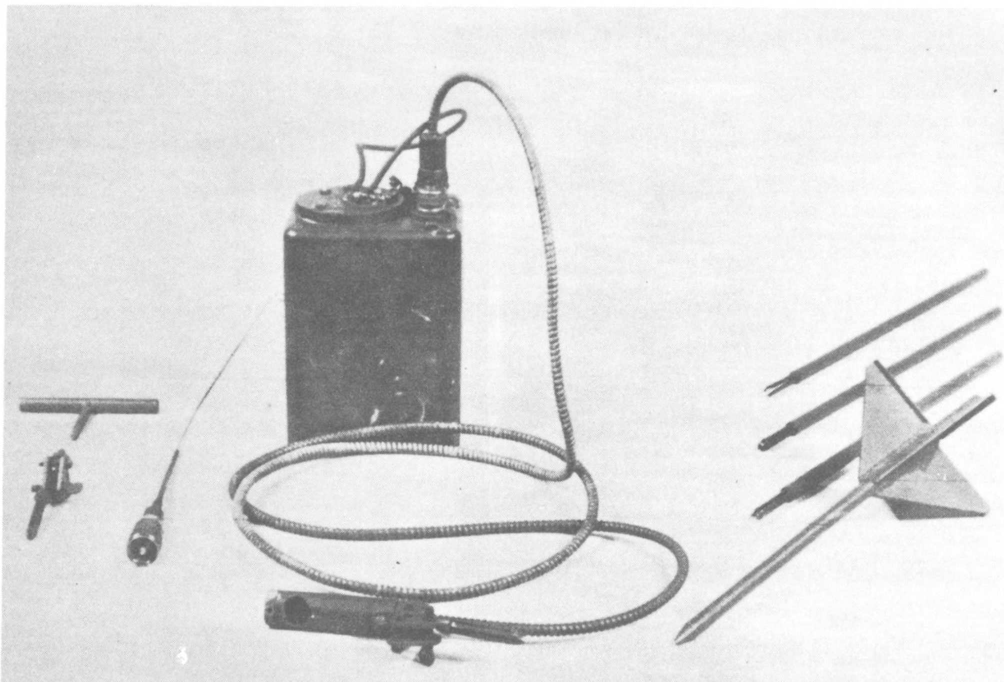


Figure E-12. (U) Pirid (Passive Infrared Intrusion Detector) (U)

PASSIVE INFRARED INTRUSION DETECTOR

1. PURPOSE: This tab provides a brief description of the Passive Infrared Intrusion Detector (PIRID).

2. DESCRIPTION: The PIRID operates as a MINI-HANDSID external sensor. It contains its own power supply which is activated only when the processing module is connected to its corresponding cable. The PIRID may be installed on supporting stakes or in trees up to 50 ft from the desired area of protection, usually a trail or small clearing. Its sensing infrared telescope has two fan-shaped fields of view, displaced by an amount approximately equal to one-tenth of its sensing distance from the target. Upon intrusion of both fields in succession, a constant-amplitude, constant-pulse-width alarm interface signal is produced at its output connector mated with the MINI-HANDSID. One 8.1 volt mercury-cell battery is used to power the PIRID and battery life under typical operating conditions is in excess of 45 days. A self-test alignment fixture is supplied for alignment and post-installation system checkout.

DISTRIBUTION: Same as basic plan

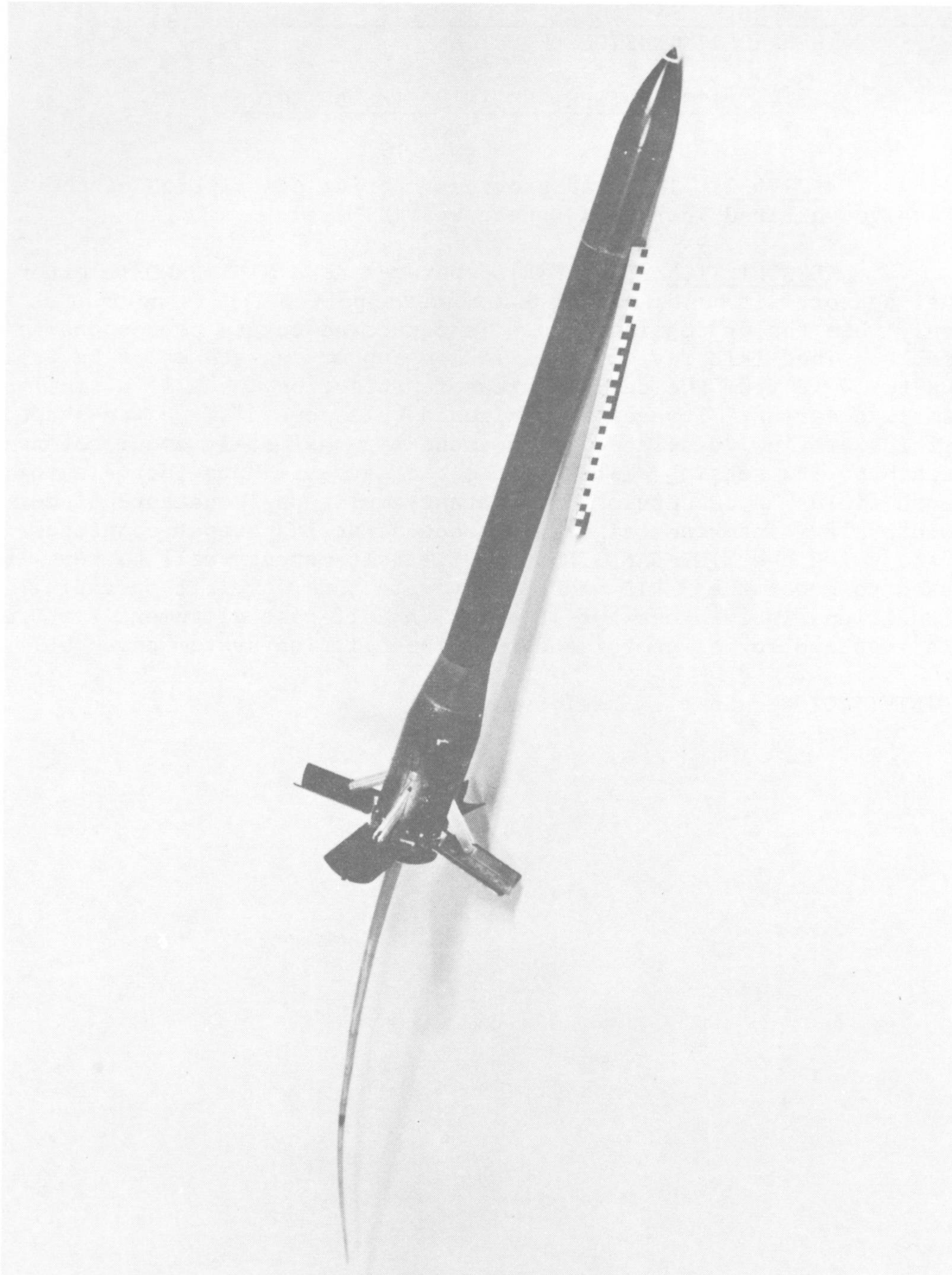


Figure E-13 . (C) Acoustic and Seismic Intrusion Detector II (U)

TAB F TO APPENDIX 3 TO ANNEX E TO PART I - STANO II TEST
ACOUSTIC AND SEISMIC INTRUSION DETECTOR II

ACOUSTIC AND SEISMIC INTRUSION DETECTOR II

1. (U) PURPOSE: This tab provides a brief description of the Acoustic and Seismic Intrusion Detector (ACOUSID).

2. (C) DESCRIPTION:

a. The ACOUSID is a Phase II seismic sensor with a detection capability improved over that of the ADSID. It is 53 inches long and weighs 40 pounds.

b. On initially produced ACOUSIDs, improvement will result from the capability to change and interrogate the sensitivity setting of the seismic detection logic. On later ACOUSIDs, further improvement will result from the addition of automatic threshold control (ATC) which samples seismic activity in three frequency bands and requires that the level in one band exceed the average of the other two bands by a certain ratio before activation is allowed. In addition, it has a feature allowing acoustic listening on command which will assist in target verification and assessment.

DISTRIBUTION: Same as basic plan

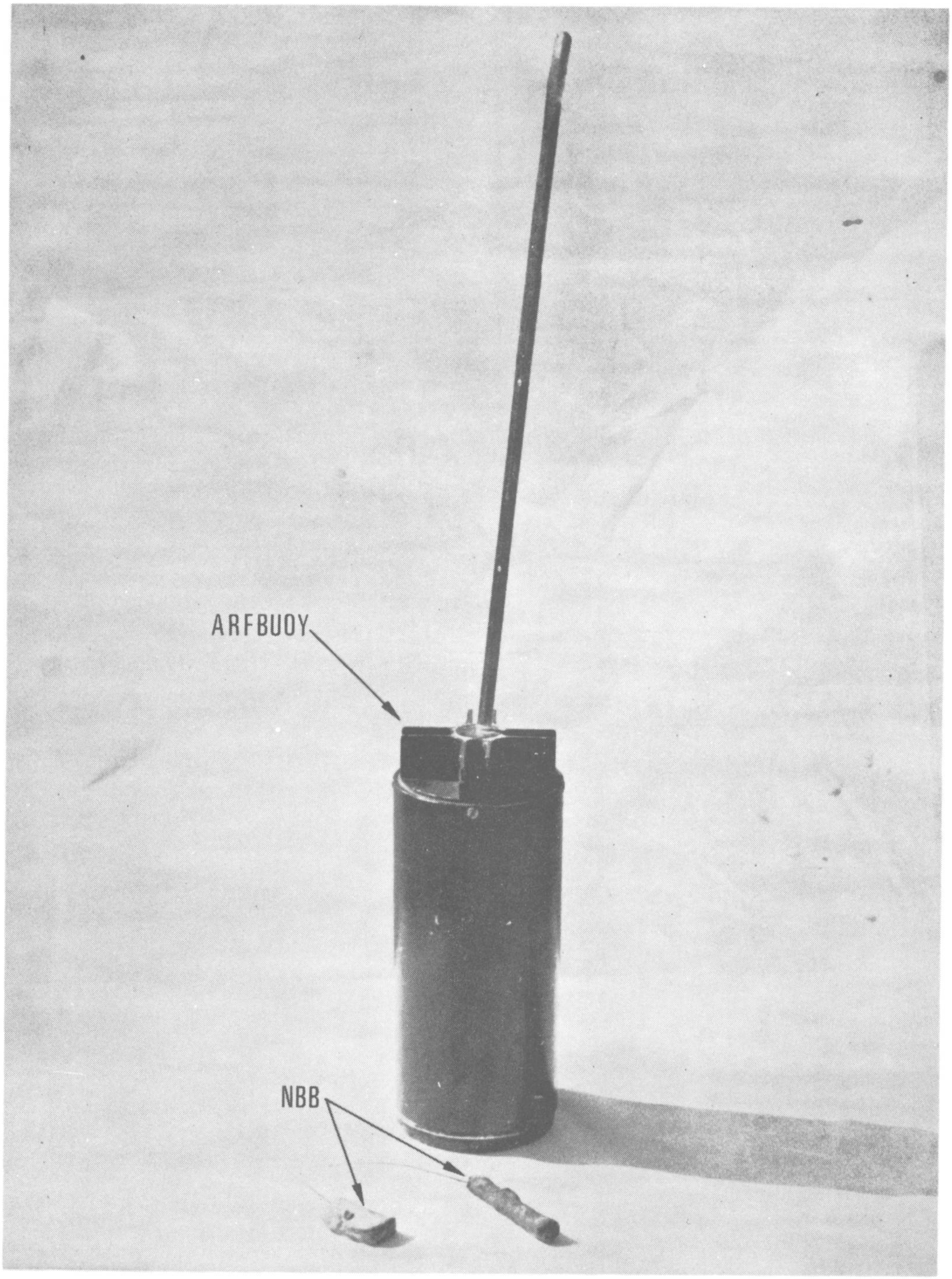


Figure E-14. (C) Automatic Radio Frequency Buoy (U)

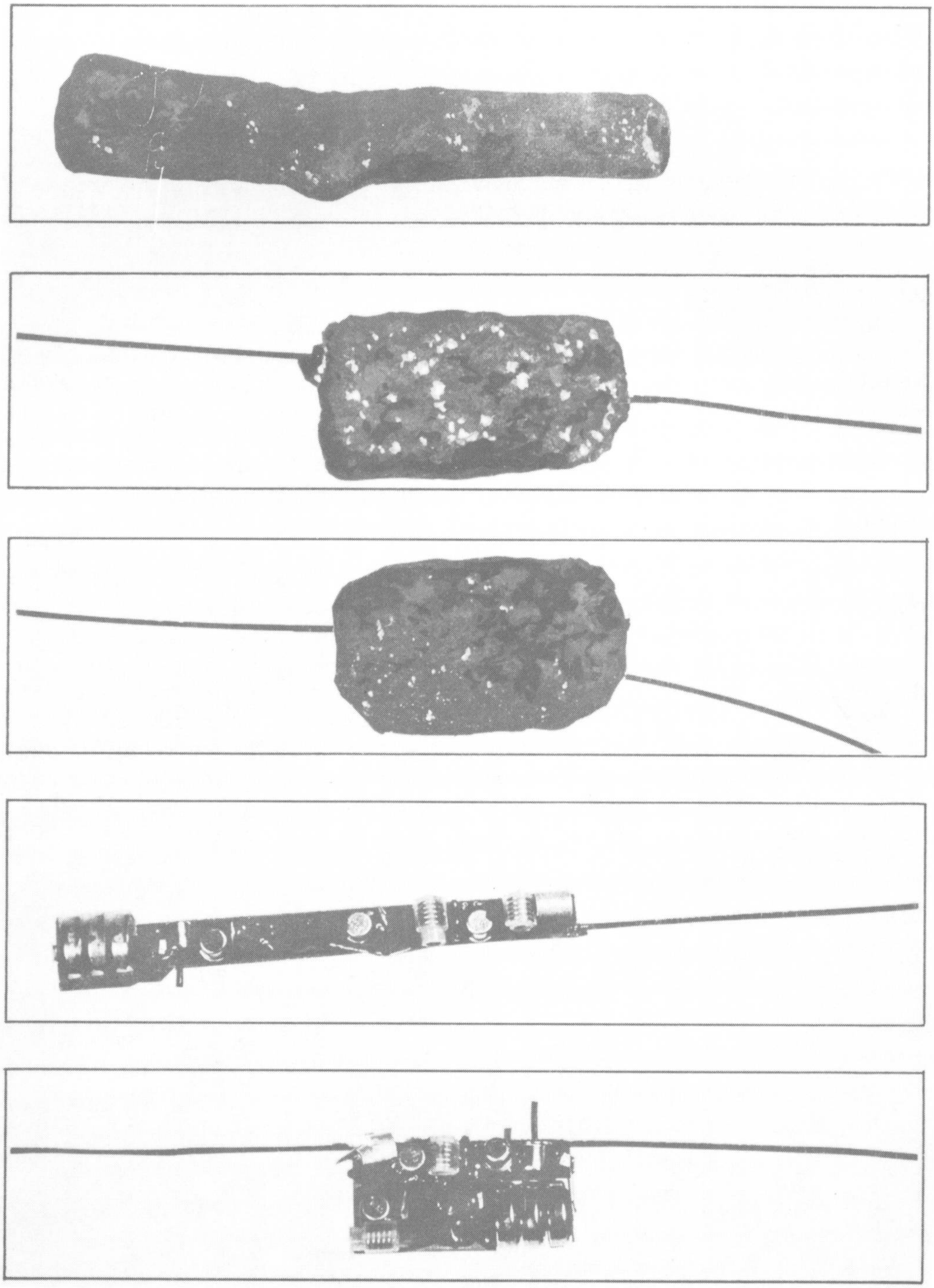


Figure E-15. (C) Noiseless Button Bomblet (U)

AUTOMATIC RADIO FREQUENCY BUOY/NOISELESS BUTTON BOMBLET

1. (U) PURPOSE: This tab provides a brief description of the Automatic Radio Frequency Buoy/Noiseless Button Bomblet (ARFBUOY/NBB).

2. (C) DESCRIPTION:

a. ARFBUOY: The ARFBUOY is a Phase I ACOUBUOY modified by lengthening the case 3½ inches and installing a Receiver Relay (RR) within the added volume. The RR is a radio receiver and logic device which receives NBB signals, analyzes the signals to determine if detection criteria are met, and upon confirming a detection, activates the ARFBUOY transmitter. Two modes are available. In the "Tone Code Only" mode, the ARFBUOY transmits a 1.5 second signal with tone code only. In the "Optional Audio" mode, the ARFBUOY transmits 20 seconds of audio to facilitate assessment, the audio being preceded and followed by the normal tone code.

b. NBB: The NBB is a small, reusable, camouflaged electronic device which emits an RF impulse when stepped on or otherwise disturbed by intruding personnel. The RF impulse is received by the RR which activates the ARFBUOY transmitter. NBB are made in various irregular shapes closely resembling rocks and twigs and are coated with a non-drying adhesive which picks up ground litter, thus enhancing camouflage. Mean life expectancy of the device is 1000 activations per NBB over a 70 day period.

DISTRIBUTION: Same as basic plan

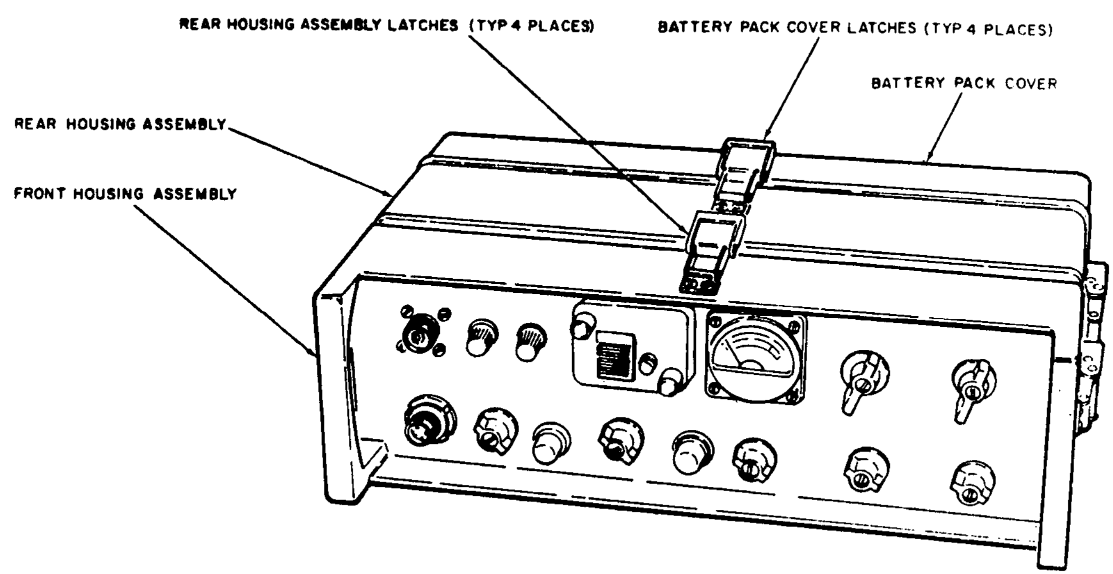


Figure E-16. Radio Frequency Monitor Set AN/USQ-42 (U)

RADIO FREQUENCY MONITOR SET AN/USQ-42

1. PURPOSE: This tab provides a brief description of the Radio Frequency Monitor Set AN/USQ-42 (PORTATLE).

2. DESCRIPTION:

a. The PORTATALE is a portable receiver designed to receive, decode, and display sensor signals and audio transmissions on any one of 31 sensor channels. Only one channel can be received at a time. It consists of a self-contained rechargeable battery, portable VHF FM receiver, display unit and hardware for mounting in vehicles or aircraft, as appropriate.

b. The unit weighs 16 pounds and has approximately 350 cubic inches in volume. When mounted in jeeps, or aircraft, the PORTATALE normally will use the external 24-28 volt power supply. Mercury dry cells can also be used with the unit.

c. The PORTATALE will identify a sensor activation by indicating the number of the tone code of the active sensor in a small window. Once this tone code appears the operator must reset the readout light in order to receive a new tone code on the same channel. Different channels can be selected by use of two channel selection switches.

d. The unit was built to military specifications and is immersion and vibration proof. In addition, the unit is equipped with a signal level meter which gives the strength of RF signals received.

e. Limited quantities of devices for PORTATALE, incorporating light displays and event recorders to greatly simplify analysis of sensor data are available.

DISTRIBUTION: Same as basic plan

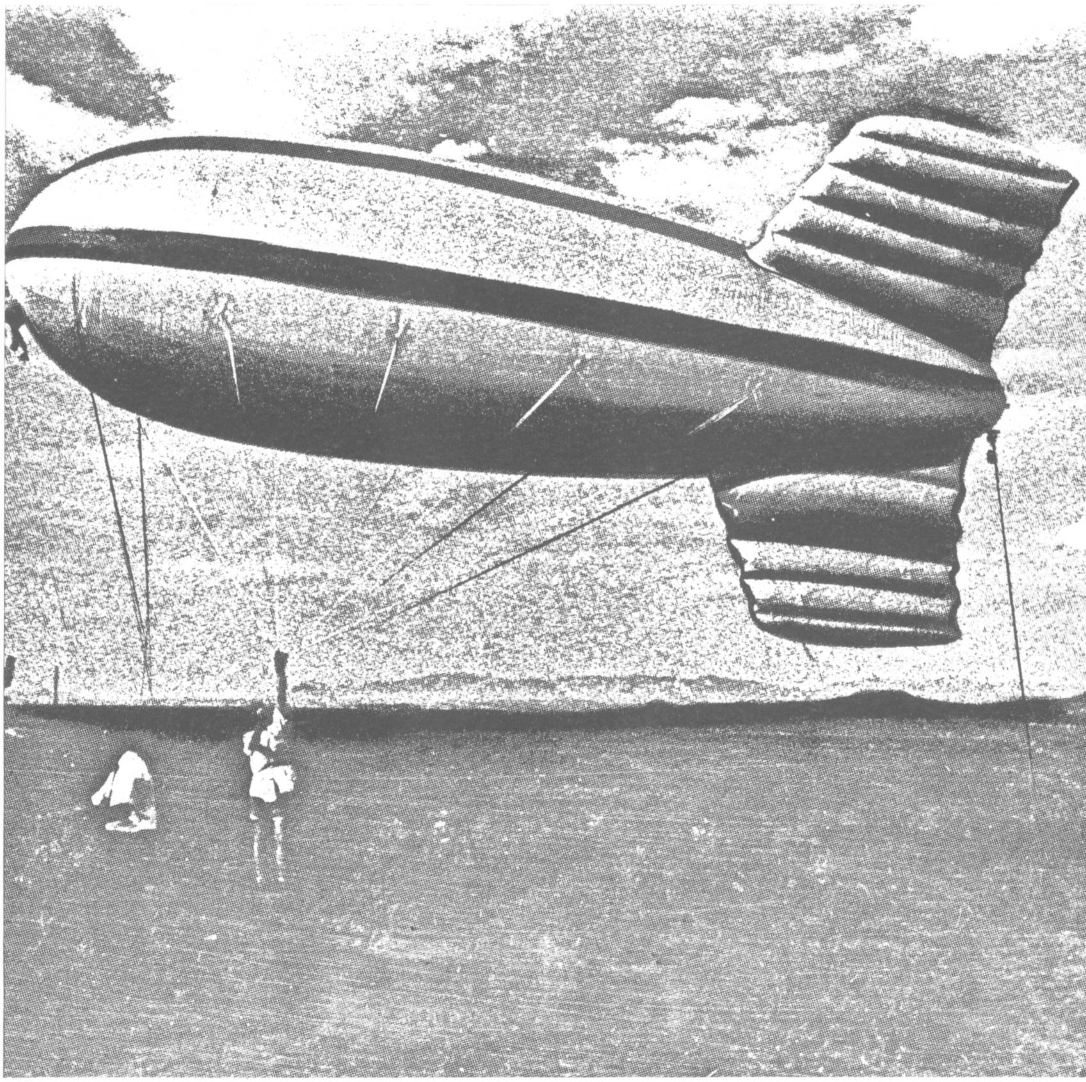


Figure E-17. Tethered Balloon Antenna for AN/USQ-42 (U)

TETHERED BALLOON ANTENNA FOR AN/USQ-42

1. PURPOSE: This tab provides a brief description of the Tethered Balloon for AN/USQ-42 (PORTATALE)

2. DESCRIPTION:

a. The tethered balloon antenna system is designed to extend the receiving range of the AN/USQ-42 (PORTATALE) or similar sensor receiving/monitoring equipment to approximately 30 miles.

b. The system consists of two 1500 cubic foot (29 ft x 10 ft filled), helium-filled balloons, carrying a VHF J-type antenna and antenna amplifier tethered with a nylon rope at height of approximately 1,000 ft above ground. The connection between the antenna/amplifier and the PORTATALE is made by a 300 ohm transmission line.

c. The system is launched from a vehicle-mounted gasoline driven winch, can remain aloft for about 24 hours, and can withstand a minimum of small arms fire. The balloon can be easily patched.

DISTRIBUTION: Same as basic plan

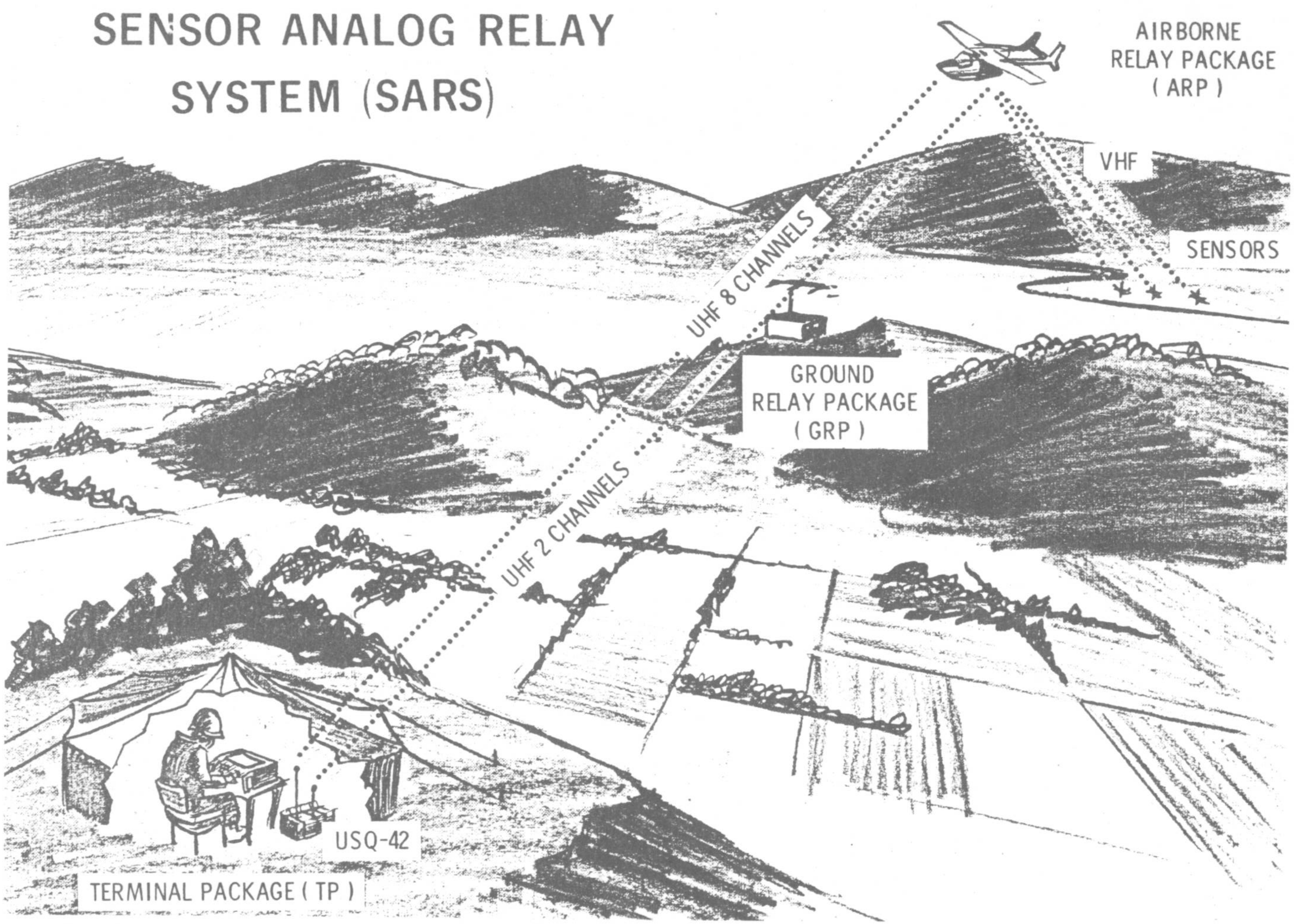


Figure E-18. (C) Sensor Analogue Relay System (U)

TAB J TO APPENDIX 3 TO ANNEX E TO PART I - STANO IF TEST
SENSOR ANALOGUE RELAY SYSTEM

SENSOR ANALOGUE RELAY SYSTEM

1. (U) PURPOSE: This tab provides a brief description of the Sensor Analogue Relay System (SARS).

2. (C) DESCRIPTION:

a. The SARS is a radio relay system designed to extend the distance over which a device such as the PORTATALE can receive signals from sensors.

b. The SARS ground relay package, which is established in a suitable relay site, can receive and relay any 2 of 31 sensor channels.

DISTRIBUTION: Same as basic plan

TRAINING PLAN

1. PURPOSE: This annex contains the proposed training plan to support the Part I - STANO II FIELD TEST.

2. GENERAL. Several types of training are required prior to the actual field evaluation. Proper planning and execution of all these types of training are essential for the success of the evaluation. These types of training are: test troops training, aggressor forces training, controller training, data collector training, and evaluator training. A definition of these types of training follows:

a. Test Troops Training. This is the training which will be given to the test troops, i.e., the friendly forces. It is the most essential training since it is required that the conceptual doctrine, organization and equipment be appropriately portrayed by troops previously unfamiliar with the concept. From the operations research view, there are two considerations in the training of the unit that is to apply the evaluated concept. First, the training must be conducted in the same manner as training is normally given in introducing the new doctrine, organization and equipment. Thus, if intensive training is envisioned for the new concept when accepted, then intensive training is indicated also for the evaluation. Since the tested concept is envisioned as being introduced into the Army within the normal training program, the troops testing it should be trained in no more detail than the typical Army training. The second consideration is that the nature and degree of training given must be accurately recorded. This is very important, since regardless of the results of the evaluation, the conclusions will be based in part upon the degree of training. Thus the evaluation report must indicate whether the troops received intensive training, average typical training, or little or no training. A detailed discussion of the test troops training; including the subjects, hours of training required, purpose or scope, and description of the training; is contained in Appendix 1.

b. Aggressor Forces Training. This is the training which will be given to the aggressor forces. Since the validity of the conclusions and recommendations of the evaluation will be greatly influenced by performance of the aggressor forces, this type of training is very important. Aggressor forces must be trained in the doctrine, organization and modus operandi of the enemy forces which they are portraying. Thus in this evaluation, aggressor forces must be trained in guerrilla operations for the Southeast Asia application

of the evaluation. In addition, aggressor troops must be motivated on the importance of their role, and be familiar with the overall concept of the evaluation. Aggressor forces must also be very familiar with the terrain on which they will operate. A detailed discussion on Aggressor Forces Training; including subjects, hours of training required, purpose and scope, and description of the training; is contained in Appendix 2.

c. Controller Training. This is the training given to the controllers and is oriented to insure that the evaluation proceeds according to plan. Controllers must be familiar with the evaluation plan, particularly the test methodology so that they can cope with unexpected situations and keep modifications within the original framework of the test. Thus the lowest level of controllers should be able to make the same corrections which the Test Director would probably make under the same conditions. A detailed discussion of the controller training; including subjects, hours of training scope or purpose, and description of the training; is contained in Appendix 3.

d. Data Collector Training. This is the training which will be given to the data collectors and should be oriented toward preventing that data collectors bias the data. Thus, ideally, data collectors should be experienced technicians skilled in the recording of observable facts. Since these experienced technicians are not available, officers and NCO's will be used as data collectors. They should be familiar with the overall concept of the evaluation and the particular operation in which they are involved. Data collectors should also be trained on such subjects as the STANO equipment from which they intend to collect data, the data forms they are to use, the administrative details of the collection plan, and the techniques used in data collection in order to avoid bias. A detailed discussion of the data collector training; including subjects, hours of training required, purpose or scope, and description of the training; is contained in Appendix 4.

e. Evaluators Training. This is the training given to the evaluators and may well be given on-the-job within the Analysis Section of the Evaluation Group. Members of the Test Directorate Organization and the USACDC/USAMC Advisory and Liaison Element can be used as the instructors for evaluators.

3. RESPONSIBILITIES. The Test Director is responsible for all training of the evaluation personnel including the test troops, aggressor forces, controllers, and evaluators. The USACDC/USAMC

Advisory and Liaison Element, and the USAMC NOTTS teams will assist the Test Director in discharging his training responsibility as indicated in the appendices to this annex.

4. CONDUCT OF THE TRAINING. Training will be conducted following the normal Army training procedures since the new concepts and equipment will be introduced into the Army under the normal training program. It is essential, however, that the motivation and technical aspects of the training for aggressor forces and data collectors be particularly emphasized in order that they may be able to portray realistically the enemy and collect unbiased data respectively. The specific details on the conduct of the various types of training are contained in Appendices 1 through 5.

Appendices
1--Test Troops Training
2--Aggressor Forces Training
3--Controllers Training
4--Data Collectors Training
5--Evaluators Training

DISTRIBUTION: Same as basic plan

APPENDIX 1 TO ANNEX F TO PART I - STANO II TEST
TEST TROOPS TRAINING

TEST TROOPS TRAINING

1. PURPOSE: This appendix contains a recommended training program for the test troops (friendly force).

2. GENERAL. The training for the test troops will be divided into individual training and unit training. The individual training will be conducted at the evaluation site during the first two weeks of the evaluation except unattended sensor operator's training which lasts three weeks and should be conducted at the Combat Surveillance and Target Acquisition School. This sensor operator training should be completed 30 days prior to the beginning of the evaluation so that these operators can be used as instructors or assistant instructors for the sensor training conducted during the training phase of the evaluation. Test troops individual training has been divided into general subjects and special subjects. The general subjects are those which will be given to all test troops, e.g., safety. The special subjects are those required only by some particular type of individual or a group of selected individuals within an organization, e.g., operator training for man-packed surveillance radar (AN/PPS-9). The unit training for the test troops will be given during the third, fourth, and fifth week of the evaluation.

3. GENERAL SUBJECTS FOR INDIVIDUAL TRAINING OF TEST TROOPS. Since these general subjects will be given to large numbers of troops, the subjects selected must be of general interest and pertinent to the evaluation. A list of recommended general subjects for individual training of all test troops follows:

General Subjects for Individual Training of all Test Troops

Subject	Purpose or Scope	Hours
Purpose and Organization of Evaluation.	Stress importance of evaluation to US Army, motivate participants, describe organization of evaluation troops. (Conference)	2
Night Operations	General description of current night operations concepts and doctrine. (Conference)	1

Subject	Purpose or Scope	Hours
SEA NITEOPS Equipment Orientation.	General orientation on SEA NITEOPS equipment to familiarize troops with types of equipment. NOTTS teams may be used as instructors. (Conference and demonstration)	1
Unattended Ground Sensor System Orientation.	General orientation on sensors to familiarize troops with types of sensors. NETTS Team may be used as instructors. (Conference and demonstration)	1
Relationship of Controllers and Data Collectors to Test Troops.	Describe in general terms missions and functions of controllers and their relationship to test troops. Members of the USACDC/USAMC Advisory and Liaison Element may be used as instructors. (Conference)	1
Safety	General orientation on safety procedures and responsibilities. (Conference)	1
Security	General orientation on security including both SEA NITEOPS and HIGH GEAR. (Conference)	1
Administrative and Support Details	General orientation on camp layout, services available, and other information of general interest to the troops. (Conference)	1
SEA NITEOPS Equipment of Wide Use by Troops	Operator's training and operator's maintenance training on night vision goggles, IR aiming lights, starlight scope, miniscope, hand-held thermal viewer,	6

Subject	Purpose or Scope	Hours
	and T-7A binoculars (AN/PAS-5). NOTTS teams may be used as instructors for SEA NITEOPS items. (Conference, demonstration and practical work)	

4. SPECIAL SUBJECTS FOR INDIVIDUAL TRAINING OF TEST TROOPS. These subjects are those required by selected individuals or selected groups of individuals, which are of primary importance to the success of the evaluation. These special subjects include subjects for training officers and key NCO's; operators of SEA NITEOPS and STANO TOE equipment not yet issued to CONUS troops; operators for STANO TOE equipment already issued to CONUS troops; drivers; pilots involved in air delivery of unattended sensors; and test troops with additional duty as data collectors. Recommended special subjects for individual training are contained in subparagaphs 3a through 3f.

a. Special Subjects for Individual Training of Officers and Key NCO's of Test Troops.

Subject	Purpose or Scope	Hours
Characteristics and Employment of Unattended Ground Sensors.	Characteristics and concept of employment for specific unattended ground sensors. NETTS team may be used as instructors. (Conference, demonstration and practical work)	16
Emplacement of Unattended Ground Sensor Systems	Practical exercise on emplacement of the various types of sensors. NETTS team may be used as instructors. (Conference, demonstration and practical work)	8
Characteristics and Employment of SEA NITEOPS Equipment	Characteristics and concept of employment for specific SEA NITEOPS items. (Conference, demonstration and practical work)	8

SUBJECT	PURPOSE OR SCOPE	HOURS
Organization of the Ground Surveillance Platoon for the Evaluation.	General orientation on the organization of the Ground Surveillance Platoon, to include mission, capabilities and concepts of employment (Conference)	2
Offensive Operations at Night	Orientation and familiarization with offensive night operations including doctrinal concepts, formations used, equipment employed, etc., in reconnaissance in force, coordinated attack against prepared positions, combat raid, movement to contact and maintaining contact, encirclement (cordon and search, hammer and anvil, fragmenting the disk, tightening the noose, fire hunt and fire flush) and pursuit. (Conference and demonstration)	8
Defensive Operations at Night	Orientation and familiarization with defensive night operations including doctrinal concepts, formations used, equipment employed, etc., in stabilized defense positions, perimeter defense, and fire base defenses. (Conferences)	8
Retrograde Operations at Night	Orientation and familiarization on doctrinal concepts, formations used, etc., on retrograde operations at night. (Conference)	

b. Special Subjects for Operators of SEA NITEOPS and Selected STANO TOE Equipment Not Yet Issued to CONUS Troops. (See Tab A for participating personnel and training time. NOTTS Team may be used as instructors for SEA NITEOPS equipment.)

Subject	Purpose or Scope
Night Vision Sight, Tripod Mounted, (AN/TVS-4) (NODMR)	To train operator on the operation and operator's maintenance. (Conference, demonstration and practical work)
Night Vision Sight Long Range (NODLR) (AN/TSS-7)	To train the operator on the operation and operator's maintenance of device. (Conference, demonstration and practical work)
Night Vision Sight, Crew Served Weapons (AN/TVS-2) (CSWS)	To train weapons crew on the mounting, operation, and operator's maintenance of this sight. (Conference, demonstration and practical work)
Surveillance Radar, Man-Packed (AN/PPS-9)	To train operator on the operation and operator's maintenance of this radar. (Conference, demonstration and practical work)
Searchlight, Supplementary Vehicular, 15 in, 1 KW, (AN/VSS-3) (SVS)	To train operator on the operation and operator's maintenance of this searchlight. (Conference, demonstration and practical work)
Searchlight, 1/4 Ton Truck, Mounted, Pink Filters, 23 inch, 2 1/2 KW (AN/MSS-3)	To train operator on the operation and operator's maintenance of this searchlight. (Conference, demonstration and practical work)
Surveillance Radar (AN/PPS-5)	To train operator on the operation and operator's maintenance of this radar. (Conference, demonstration and practical work)

c. Special Subjects for Operators of STANO TOE Equipment Already Issued to CONUS Troops. (Test Troops' Commander will determine participating personnel and training time.)

Subject	Purpose or Scope
Binocular, M-18 Hand Held	To familiarize troops with use of this binocular. (Conference, demonstration and practical work)
Metascope Modified for M-17 Range Finder	To familiarize troops with the use of this device. (Conference, Demonstration and Practical work.
Periscope, Tank Gunners M-32, IR M48A3 Tank	To familiarize troops with the use of this periscope. (Conference, demonstration and practical work)
Periscope, Tank XM44E1	To familiarize troops with the use of this periscope. (Conference, demonstration and practical work)
Searchlight, IR, Pink Filter (AN/VSS-2) Tank Mounted	To familiarize troops with the use of this searchlight. (Conference, demonstration and practical work)

d. Special Subjects for Drivers of Wheeled and Tracked Vehicles. All drivers of wheeled and tracked vehicles should be given at least 1 hour of practice driving with the night vision goggles (image intensifier) and the electronic binocular, T-7A, IR, head-mounted.

e. Special Subjects for Pilots Involved in Air Delivery of Unattended Ground Sensors. All pilots who will be engaged in air delivery of unattended ground sensors should receive 16 hours training on this subject.

f. Special Subjects for Test Troops with Additional Duty as Data Collectors. Test troop personnel who have the additional duty of collecting data (e.g., Battalion Communication Center personnel) should receive 1 hour training in using the supplementary forms used in the evaluation.

5. UNIT TRAINING FOR TEST TROOPS. After the individual soldiers have become proficient in the employment of STANO devices unit training should be conducted to integrate the coordinated use of these devices at all appropriate unit levels. The subjects recommended have been selected for developing the unit proficiency in night operations using the new doctrine, organization and concepts of employment for the STANO equipment. These subjects have been grouped into subjects for: Rifle Company Unit Training, Armored Cavalry Platoon Unit Training; Army Aviation Unit Training, Artillery Unit Training and Tank Platoon Training. (Training time has been left at the discretion of unit commander, however, it should not be less than 6 hours per period and may be repeated until proficiency is achieved). The Combat Support Company and the Headquarters and Headquarters Company can train by supporting the Rifle Company as needed.

a. Subjects for Rifle Company Unit Training.

Subject	Purpose or Scope
Rifle Squad in Night Reconnaissance Patrol	To train squad on foot movement through different types of terrain while on reconnaissance missions using STANO equipment. (Conference and practical exercise)
Rifle Squad in Night Ambush Mission	To train the squad in setting up an ambush (including reconnaissance) during the night using STANO equipment. (Conference and practical exercise)
Rifle Platoon in Night Reconnaissance in Force	To train platoon on foot movement cross-country at night using STANO equipment while engaged in reconnaissance. (Conference and practical work)
Rifle Platoon in Ambush Mission at Night	To train platoon foot movement on setting up an ambush at night using STANO equipment. Reconnaissance may be accomplished during daylight or night. (Conference and practical work)
Rifle Platoon Air Assault at Night	To train platoons in marshalling, pick up, air movement to landing zone, dismount to attack positions, and extraction from a different landing zone. (Conference and practical exercise)

Rifle Company in Coordinated Attack	To attain unit proficiency in night attack using STANO equipment. Includes road march, obstacles and mines removal, attack on fortified position and reorganization after occupation of the position. Also includes armor, artillery, and Army air support. Coordination and control measures should be stressed. (Conference and practical work)
Rifle Company Encirclement Operations at Night	To train the company in cordoning an objective area at night using STANO equipment. (Cordon may start after midnight to be completed at dawn with search during daylight or search may be simulated.) Use mobile blocking forces, armor or mechanized forces (if available). Stress use of supporting fires for preventing aggressor forces to escape. (Conference and practical work)
Rifle Company in a Night Perimeter Defense	To train the company in night perimeter defense using STANO equipment. First, practice setting the perimeter defense during daylight time (evening preferred) including the use of unattended ground sensors. Then move the company to another location and set the perimeter defense during limited visibility. Stress establishing communications and coordinating friendly fires during the night. (Conference and practical exercise)
Rifle Company in Night Defense of Artillery Fire Base	To train the company in establishing a perimeter defense of an artillery unit and the infantry battalion CP using STANO equipment. Stress coordination with artillery unit. (Conference and practical work)
Rifle Company in Conventional Defensive Positions at Night	To train the unit in moving into an area and establishing defensive positions at night using STANO equipment. Use unattended gound sensors and

Subject	Purpose or Scope
	surveillance equipment. Stress construction of field fortifications. (Conference and practical work)
Rifle Company in Passage of Lines at Night	To train the unit into crossing through friendly lines at night using STANO equipment. Use two rifle companies and alternate their operation; one will be in position while the other crosses the line. Stress coordination. (Conference and practical exercise)
Rifle Company in Night Retrograde Operation	To train unit in night retrograde movement stressing unit integrity and control through the use of STANO equipment. (Conference and practical work)
Rifle Company in Live Firing Exercise	To familiarize unit with firing their weapons at night using STANO equipment. Include road march up to preselected positions on firing range. (Conference and practical work)

b. Armored Cavalry Platoon Unit Training.

Subject	Purpose or Scope
Platoon in Reconnaissance of Force at Night	To train the platoon in moving cross country in tactical formations at night while performing reconnaissance using STANO equipment. (Conference and practical exercise)
Platoon in Ambush at Night	To train platoon in moving to and establishing an ambush at night using STANO equipment. (Conference and practical exercise)
Armored Cavalry Platoon in Night Route Security	To train the cavalry platoon in night route security including flank security minesweeping and strong points. (Conference and practical exercise)
Armored Cavalry Platoon in Coordinated Night Attack	To train the cavalry platoon in attacking a fortified position at night. Include road march, mine removal, and

Subject	Purpose
	coordination with supporting units. (air and artillery support) (Practice under different degrees of illumination, e.g., ambient light, diffused visible light, and IR light if time permits. (Conference and practical exercise)
Armored Cavalry Platoon in Night Screening and Blocking Operation	To train the platoon in screening and blocking operation at night using STANO equipment. Includes moving into positions where contact with the enemy can be maintained and deploying blocking forces. Stress requests for reinforcements and supporting fires. (Conference and practical exercise)
Armored Cavalry Platoon Encirclement Operation at Night	To train troops on encirclement operations at night using STANO equipment. Includes cordoning off an area (Preferably after midnight) and searching during dawn or simulated. Stress use of mobile blocking forces and employment of air and artillery fires to prevent enemy from escaping. (Conference and practical exercise)
Armored Cavalry Platoon in Night Perimeter Defense	To train troops in night perimeter defense. First establish perimeter defense during daylight using unattended ground sensors, then retrieve sensors during daylight, move to another location at night and establish new perimeter using STANO equipment and the unattended ground sensors. Stress establishing communications, coordination. (Conference and practical exercise)
Armored Cavalry Platoon in Live Firing Night Exercise	To train trocps in live firing at night using STANO equipment. Includes tactical road march to range, setting up positions and live firing of weapons using STANO equipment. (Conference and practical exercise)

c. Unit Training for Artillery Battery and Other Artillery

Elements. The unit training for the artillery units will consist of supporting the infantry and armored cavalry units during their unit training exercises. During these exercises, artillery units, using STANO equipment should practice night movement and night occupation of positions, moving to alternate positions and providing supporting fires. Practice on target acquisition at night with the aid of STANO equipment should be stressed. Searchlight elements should work with infantry units providing illumination support and develop proficiency in changing types and levels of illumination support with minimum delay. Live firing using STANO equipment is recommended for the 105mm Artillery Battery. Practice on registration, adjustment and shift of fires should be stressed.

d. Unit Training for Aviation Units. The unit training for aviation units will consist of supporting infantry and armored cavalry units during their unit training exercises. During these exercises, aviation units using the STANO equipment should practice night flying, surveillance, target acquisition, and other support missions for the units supported.

e. Unit Training for the Tank Platoon. The unit training for the Tank Platoon will consist of supporting the infantry and armored cavalry units during their unit training exercise. During these exercises, the platoon, using STANO equipment, may be used to provide convoy security and to reinforce the infantry units in attack, defense, retrograde movement or as required by the supported units. The platoon may conduct live firing using STANO equipment.

f. Unit training for the Battalion Ground Surveillance Platoon. The unit training for the ground surveillance sections will consist of supporting infantry and armored cavalry elements during the conduct of their unit training exercises. During these exercises, the surveillance and search light sections, using STANO equipment and sensors, may be used to enhance the security, surveillance, and target acquisition efforts of the unit.

Tab
A--Operator Training

DISTRIBUTION: Same as basic plan

TAB A TO APPENDIX 1 TO ANNEX F TO PART I - STANO II TEST
OPERATOR TRAINING

Operator and Operator Maintenance Training of SEA NITEOPS and
Selected Items of STANO TOE Equipment

	NODMR	NODLR	HHV	CSWS	AN/PPS-5	AN/PPS-9	SLT,23IN.
Hq & Hq Co. Inf Bn, 50 Cal MG Crews				1			
Cmbt Spt Co. Inf Bn, Rcn Plat Hq	1						
Cmbt Spt Co. Gnd Surv Plat					32	32	
Rifle Co. Rifle Plat			1				
Rifle Co. Hq Sec	1					40	
Armd Cav Plat, Plat Hq	1			1			
Armd Cav Plat, Scout Sec				1			
Armd Cav Plat, Tk Sec				1			
Armd Cav Plat, Rifle Sqd			1	1			
Pathfinder Section			1				
FA Btry (105), FO Sec	1	1					
FA Btry (105), Firing Btry				1			
Tk Plat							2

DISTRIBUTION:
same as basic plan

APPENDIX 2 TO ANNEX F TO PART I - STANO II TEST
AGGRESSOR FORCES TRAINING

AGGRESSOR FORCES TRAINING

1. PURPOSE: This appendix contains a recommended training program for the aggressor forces.

2. GENERAL: Aggressor forces will be trained during the first two weeks of the evaluation. Aggressor forces training has been divided into individual training and unit training.

3. INDIVIDUAL TRAINING FOR AGGRESSOR FORCES. The subjects for individual training for aggressor forces have been divided into general subjects and special subjects. General subjects are those which will be given to all aggressor forces. Special subjects are those which will be given to some particular type of individual or a selected group of individuals.

a. General Subjects for Individual Training of Aggressor Forces.

Subject	Purpose or Scope	Hours
Purpose and Organization of the Evaluation	Stress importance of evaluation to US Army, motivate participants, describe organization of evaluation troops. (Conference)	2
Night Operation Tactics of the VC	General orientation on VC tactics, organization and equipment.	1
Aggressor Responsibilities	General orientation on special instructions and duties to motivate aggressor troops on the importance of their role. (Conference)	2
Relationship of Controllers and Data Collectors to Aggressor Forces	General orientation on missions and functions of controllers and data collectors, and their relationship to aggressor forces. (Conference)	1

Subject	Purpose or Scope	Hours
Safety	General orientation on safety procedures and responsibilities. (Conference)	1
Security	General orientation on security including both SEA NITEOPS and HIGH GEAR.	1
Support and Administration	Orientation on camp layout, services available, and other information of general interest. (Conference)	1
Guerilla Tactics	Tactics, organization and modus operandi of guerilla forces. (Conference and practical work)	16

b. Special Subjects for Squad and Platoon Leaders and Company Commanders of Aggressor Forces.

Subject	Purpose or Scope	Hours
Controller Duty Orientation	To familiarize aggressor officers and key NCO's with the duties of controllers since they may act as controllers. Individual training requirements for aggressor controllers are contained in Appendix 3 to this annex.	4
Characteristics of Live Fire Range	To familiarize officers and key NCO's with the characteristics of a live range.	1
Simulations	To familiarize officers and key NCO's with the procedures and equipment used in simulations. (Conference and demonstration)	2

Subject	Purpose or Scope	Hours
Completion of Data Forms	To familiarize officers and key NCO's with the forms and procedures for completing these forms. (Conference and practical work)	2

4. UNIT TRAINING FOR AGGRESSOR FORCES. The purpose of this training will be to familiarize the aggressor forces with the role that they will portray in the evaluation and the terrain in which they will operate. Thus, unit training for aggressors will consist of rehearsals for the scenarios. In addition, aggressor forces will construct the live firing range complex for the evaluation during the unit training phase.

DISTRIBUTION: Same as basic plan

CONTROLLER TRAINING

1. PURPOSE: This appendix contains a recommended training program for personnel assigned as controllers to aggressor and friendly troops during the conduct of the STANO II field test.

2. GENERAL. Subjects included in the training for controllers are of two types, general and special. general subjects provide background and other information beneficial to the controller while special subjects train him in the performance of his specific duties.

3. GENERAL SUBJECTS.

Subject	Purpose or Scope	Hours
Purpose and Organization of the Evaluation	Stress importance of evaluation to the Army, motivate participating personnel, discuss purpose of the evaluation, and the Test Directorate Organization. (Conference)	2
STANO Equipment Orientation	General orientation on STANO equipment. (Conference)	1
Unattended Ground Sensor System Orientation	General orientation on aerial and hand-emplaced ground sensors. (Conference)	1
Night Operations	Concept of operations employing STANO equipment. (Conference)	2
Organization of the Ground Surveillance Platoon for the Evaluation	General orientation in the organization of the infantry battalion Ground Surveillance Platoon.	2

Subject	Purpose or Scope	Hours
Safety	General orientation on safety procedures and responsibilities. (Conference)	1
Security	General orientation on security applicable to STANO equipment. (Conference)	1
Administrative and Support Details	General orientation on camp layout and other information of interest to evaluation personnel. (Conference)	1
Evaluation Methodology	Detailed description of the Evaluation Group organization and the functions of each branch. General orientation on the over-all methodology and rationale used to develop the STANO II Evaluation Plan. (Conference)	2

4. SPECIAL SUBJECTS.

Subject	Purpose or Scope	Hours
Scenario	Orientation on the final detailed scenarios. (Conference)	8
Control Plan	Orientation on the final control plan. (Conference)	8
Final Scenario and Control Plan	Instruction on general conceptual guidance and how to adapt the final detailed scenarios and the control plans to the terrain selected for the	2

Subject	Purpose or Scope	Hours
	evaluation maneuvers. (Conference)	
Exercise of Control Responsibilities	Instruction in methods employed to insure that unit commander's select alternatives which are prescribed in the Scenario. (Conference)	2
Terrain Familiarization in Daylight	Controllers reconnoiter and become familiar with the ground and routes used in the final scenario. (Practical exercise)	16
Control Measurements	Controllers receive instructions on selection of areas to be measured and measurement methods, then proceed to the test site to plant stakes, measure control distances, and to determine logical positions,fields of observation, etc. (Conference and practical exercise)	16
Terrain Familiarization, Night	Controllers become familiar with key landmarks and routes during the hours of darkness. (Practical exercise)	8
Control Exercises	Controllers observe training of units they are scheduled to control during the unit training phase and practice controlling these units during the pilot test phase. During this period, controllers are instructed to identify areas and information which would lead to changes in the final control plan. (Conference and practical exercise)	48

DISTRIBUTION: Same as basic plan

DATA COLLECTOR TRAINING

1. PURPOSE. This appendix contains a recommended training program for personnel collecting data on activities of aggressor and friendly troops during the conduct of the STANO II Part I Field Evaluation.

2. GENERAL. Subjects included in the training for data collectors are of two types, general and special. General subjects provide background and other information beneficial to the collector, while special subjects train him in the performance of his specific duties.

3. GENERAL SUBJECTS:

Subject	Purpose or Scope	Hours
a. Purpose and Organization of the Evaluation	Stress importance of evaluation to the Army, motivate participating personnel, discuss purpose of the evaluation and organization of the test directorate organization. (Conference)	2
b. STANO Equipment Orientation	General orientation on STANO equipment. (Conference)	1
c. Unattended Ground Sensor System Orientation	General orientation on aerial delivered and hand emplaced ground sensors. (Conference)	1
d. Night Operations	Concept of operation employing STANO equipment. (Conference)	2
e. Organization of the Ground Surveillance Platoon for the Evaluation	General orientation on the organization of the Ground Surveillance Platoon to conduct the evaluation.	1

	Subject	Purpose or Scope	Hours
f.	Safety	General orientation on safety procedures and responsibilities. (Conference)	1
g.	Security	General orientation on security applicable to STANO equipment. (Conference)	1
h.	Administrative and Support Details	General orientation on camp layout and other information of interest to evaluation personnel. (Conference)	1
i.	Evaluation Methodology	Detailed description of the evaluation group organization and the functions of each branch. General orientation on the overall methodology and rationale used to develop the STANO II Evaluation Plan. (Conference)	2

4. SPECIAL SUBJECTS:

	Subject	Purpose or Scope	Hours
a.	Collection Plan	Instruction in the general organization of the STANO II Detailed Data Collection Plan and on techniques to be used by data collectors. (Conference)	8
b.	Data Forms	Instruction in the rationale used and organization of data forms used in the evaluation. Data collectors edit and test data forms to insure they elicit the required information. (Conference and practical exercise)	16

Subject	Purpose or Scope	Hours
c. Data Collection Exercises	Data collectors practice use of data and debriefing forms during the unit training phase and during the pilot test phase. Based on experiences encountered in the process of collecting data during these two phases, collectors recommend modifications to question or data form format or to the data collection plan to improve or facilitate the collection effort. (Practical exercise)	As required

DISTRIBUTION: Same as basic plan

EVALUATOR TRAINING

1. PURPOSE: This appendix contains a recommended training program for personnel evaluating data collected during the conduct fo the STANO II Field Evaluation.

2. GENERAL. Subjects included in the training for evaluators are of two types, general and special. General subjects provide background and other information beneficial to the evaluator while special subjects train him in the performance of his data reduction and analysis duties.

3. GENERAL SUBJECTS.

Subjects	Purpose or Scope	Hours
Purpose and Organization of the Evaluation	Stress importance of evaluation to the Army, motivate participating personnel, discuss purpose of the evaluation and the Test Directorate Organization. (Conference)	2
STANO Equipment Orientation	General orientation on STANO equipment. (Conference)	1
Unattended Ground Sensor System Orientation	General orientation on aerial delivered and hand emplaced ground sensors. (Conference)	1
Night Operations	Concept of operation employing STANO equipment. (Conference)	2
Organization of the Ground Surveillance Platoon for the Evaluation	General orientation on the organization of the Ground Surveillance Platoon to Conduct the Evaluation	1

Subject	Purpose or Scope	Hours
Safety	General orientation on safety procedures and responsibilities. (Conference)	1
Security	General orientation on security applicable to STANO equipment. (Conference)	1
Administrative and Support Details	General orientation on camp layout and other information of interest to evaluation personnel. (Conference)	1
Evaluation Methodology	Detailed description of the Evaluation Group organization and the functions of each branch. General orientation on the overall methodology and rationale used to develop the SNOE II Evaluation Plan. (Conference)	2

4. SPECIAL SUBJECTS.

Subject	Purpose or Scope	Hours
Analysis Plan	Orientation of evaluators with the STANO II Detailed Analysis Plan. (Conference)	4
Analysis Operations	Instructions on preparation of work books or spread sheets, methods of weighting and analysis, and procedures for modifying the control and data collection plans. (Conference and practical exercise)	2

Subject	Purpose or Scope	Hours
Analysis Exercise	Evaluators first practice weighting and analyzing data using the work books or spread sheets they have prepared. As data forms become available from the unit training and pilot test phases, workbooks or spread sheets are modified; and in coordination with controllers and collectors: the control plan, the collection plan, and individual dataforms are revised as necessary. (Practical exercise)	as required

DISTRIBUTION: Same as basic plan

METHODOLOGY PLAN

1. PURPOSE: This annex presents the test methodology plan to be used in the STANO II preliminary field test.

2. BASIC METHODOLOGY:

a. The STANO II preliminary evaluation is designed to evaluate the use of selected items of STANO equipment. Due to the fact that much of the equipment is new, a secondary purpose of the evaluation is to obtain maintenance and reliability data about the new devices while they are in the hands of the field soldier. The methodology presented will permit determination of the workability of selected STANO items and disclosure of some aspects that prove to be unworkable.

b. This test makes use of a pyramidal logic structure consisting of objectives, subobjectives, essential elements of analysis (EEA), and data requirements (checklist questions). It requires a detailed scenario which creates the situation necessary for data generation, a control plan (Annex H) for insuring strict adherence to the scenario, a data collection plan (Annex J) for insuring that the data is recorded, and an analysis plan (Annex K) that insures objectivity in reaching conclusions and making recommendations.

c. The methodology applied to the test:

(1) Provides a methodical basis for a determination of the soundness of the operations tested.

(2) Isolates the major problems and provides sufficient information to determine if these problems are due to test factors, situation or environmental factors.

d. The assessment of soundness and workability rests on the assumptions that:

(1) Essential concepts are tested.

(2) Minimum standards of soundness and workability are established prior to the evaluation of the test data.

(3) The methods of equipment employment are considered workable if the tested unit can employ STANO equipment to advantage without constituting too large a drain on that unit's resources.

3. TEST STRUCTURE:

a. The general structure of this test is organized to contain successively lower levels of generalization associated with successively greater detail. These levels are described below in descending order:

(1) Method of Employment. This subject constitutes the "conditions" under which the test is conducted andthe subject of this test. Guidance is contained in Annex B.

(2) Objectives. This test is organized in terms of five objectives, which can indicate the relative soundness and workability of the items of equipment.

(3) Subobjectives. These are the logical subdivisions of the objectives.

(4) Essential Elements of Analysis. The EEA are the major questions which must be answered and evaluated in order to draw conclusions about the subobjectives.

(5) Questions.

b. The question must be answered by observing field operations; their answers will provide the data required to answer the EEA. This plan provides questions under Data Requirements in Annex D. The development of any necessary additional field data questions is one of the primary tasks of the Analysis Section and is discussed in Annex J.

c. Relationships within the test structure are shown through logic diagrams in Annex D. The overall test structure is diagrammed in Appendix 1. During planning, the construction of these diagrams forces a continuous examination of the rationale for each level of evaluation. During data reduction and analysis, the diagrams show the relation of EEA to the objectives.

d. The Evaluation Group initially performs the prior planning and analysis required. Its first task is to break down the test concept into the objectives, subobjectives and EEA. Experience in other troop tests has shown that analysis is best accomplished by dividing the group into teams; one team for each objective. Each team should study how its assigned objective, subobjectives and EEA

have been broken down to ensure that the test is complete and impartial. When the analysis of the objectives have been completed, the evaluation staff will be re-formed into three new sections: analysis, data collection and control. Annexes H, J and K provide the details necessary to plan the above three (3) sections. Appendix 2 is an organizational diagram of the Evaluation Group.

4. TEST DESIGN:

a. The STANO II TEST design is intended to provide a basis for decisions on the methods of employment of the STANO equipment to be used in Southeast Asia.

b. The test design to be implemented is shown below:

(1) SOUTHEAST ASIA METHODS OF EMPLOYMENT

SEA CONTROL ZERO STANO EQUIPMENT	SEA RUN #1 WITH STANO EQUIPMENT	SEA CONTROL ZERO STANO EQUIPMENT	SEA RUN #2 WITH STANO EQUIPMENT

(2) RESERVE RUN

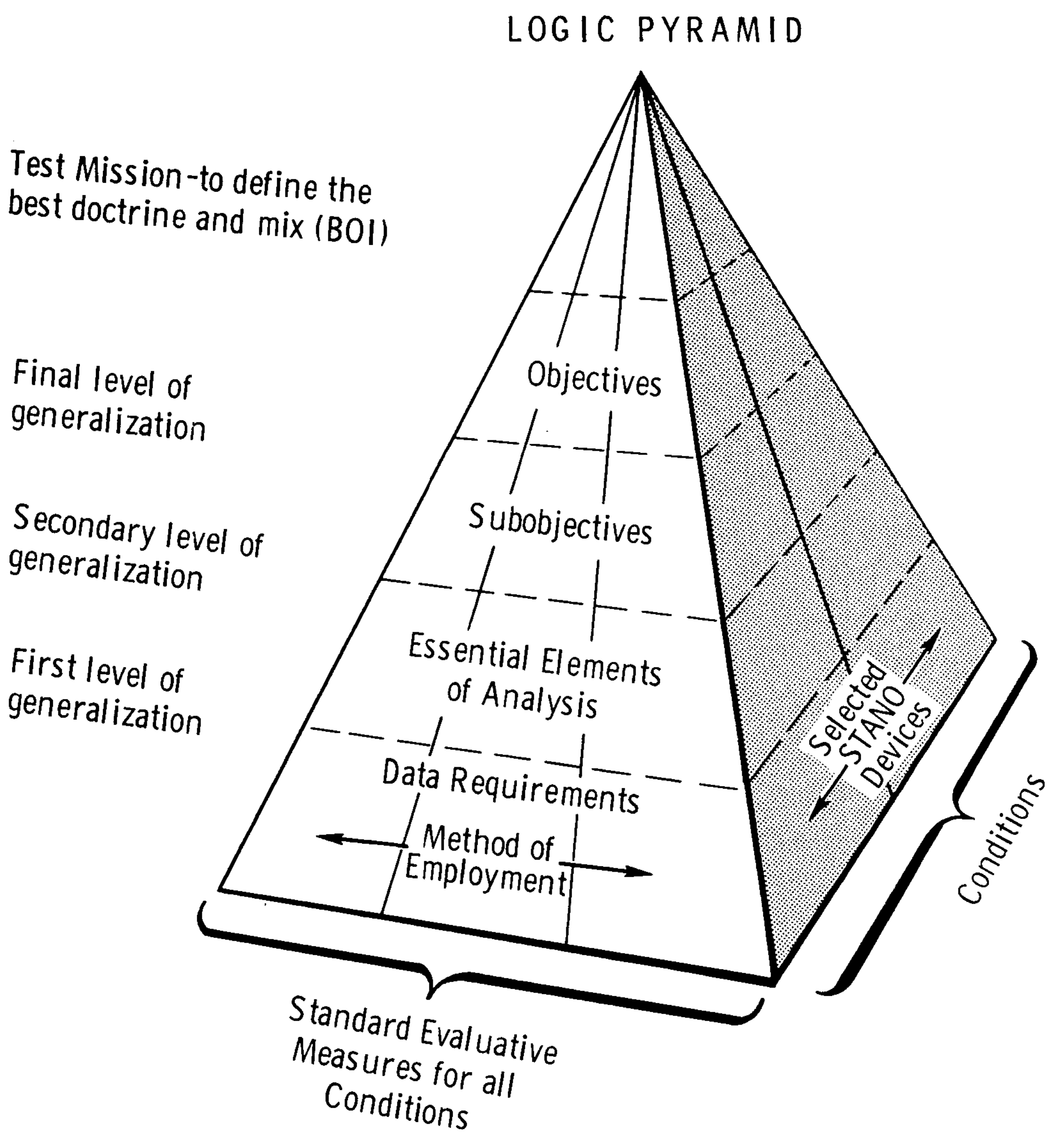
RESERVE RUN (TO REPLACE ANY OF THE ABOVE AS NECESSARY)

Appendices

1--Logic Pyramid
2--Evaluation Group Organization

DISTRIBUTION: Same as basic plan

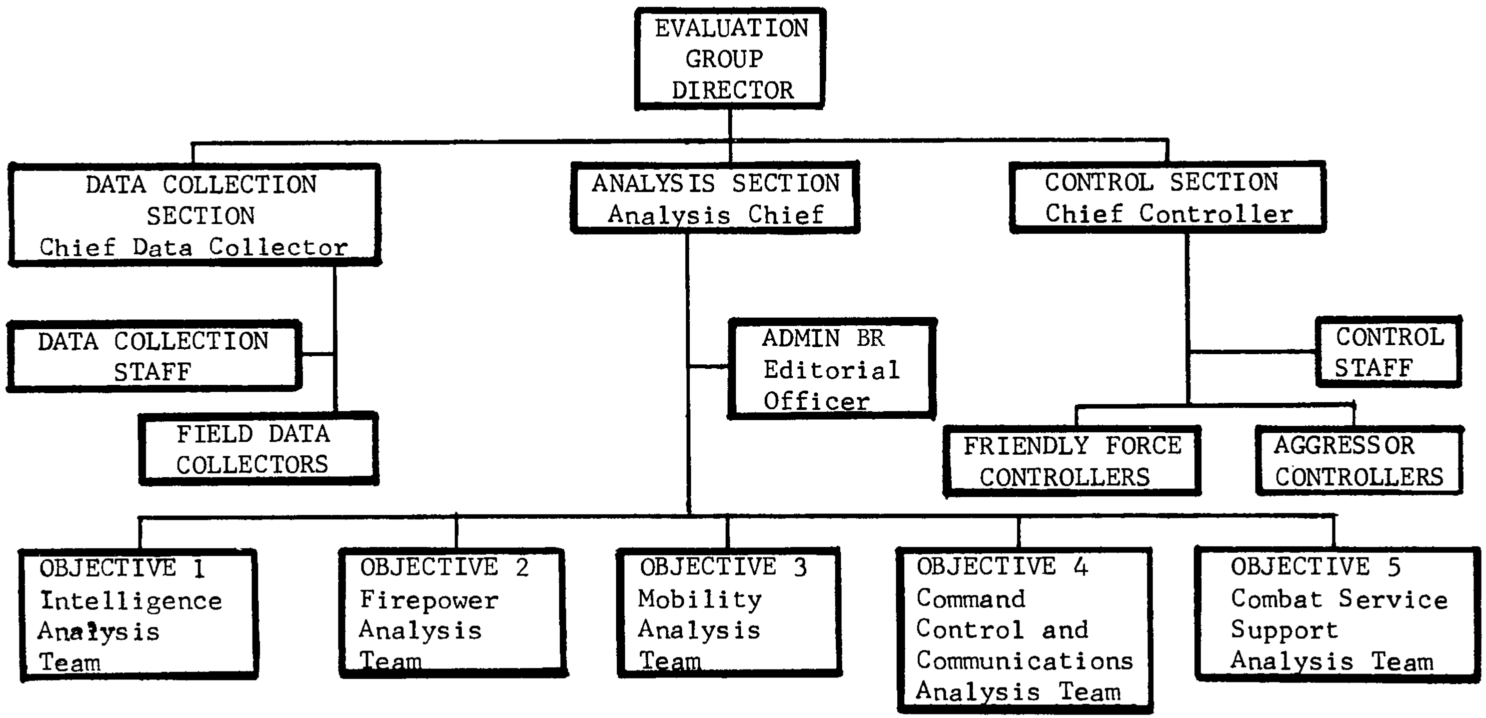
APPENDIX 1 TO ANNEX G TO PART I - STANO II TEST
LOGIC PYRAMID



Distribution: Same as basic plan

APPENDIX 2 TO ANNEX G TO PART I - STANO II TEST
EVALUATION GROUP ORGANIZATION

EVALUATION GROUP ORGANIZATION



DISTRIBUTION: Same as basic plan

CONTROL PLAN

1. PURPOSE: This annex contains the control plan to be used during the conduct of the STANO II preliminary field test.

2. OBJECTIVE: The objective of the control plan is to ensure that the planned actions take place to test the proposed employment of STANO equipment, that adequate data is generated and collected, and that sufficient operational realism exists for test results to be considered credible. During the conduct of the test, the Control Section directs the execution of scenario events, supervises player troops, maintains cognizance of test progress, recommends and implements scenario changes, and maintains a complete historical log of the test.

3. CONTROL SECTION:

a. General. The Control Section is a component element of the Evaluation Group.

b. Organization. The Control Section will be composed of a Chief Controller, a control staff, and field controllers. The field controllers will be assigned to friendly and aggressor units and will be provided the necessary communications and transportation facilities to accomplish their mission. The staff will be provided clerical support during the pre-test stage to assist in compiling the final control plan and scenario. An organizational diagram of the Control Section is contained in Appendix 1.

c. Duties and Responsibilities.

(1) Chief Controller.

(a) Supervises the design of the final control plan and scenario.

(b) Coordinates with the Collection and Analysis Sections to ensure that the scenario generates the required data and can be collected.

(c) Supervise the training of the field controllers.

(d) Ensures orderly development of the scenario action.

1. Issues orders initiating, stopping or changing scenario event.

2. Keeps the Evaluation Group Director informed of any problem areas.

3. Makes recommendations to the Evaluation Group Director concerning the exercise of control based on:

a. The needs of the Analysis Chief or the Chief Data Collector pertaining to completeness or quality of data, especially recommendations concerning event repetition.

b. The needs of friendly or aggressor player troops.

(2) Control Staff.

(a) Writes the final control plan and scenario.

(b) Trains the field controllers.

(c) Supervises and coordinates with the field controllers.

(d) Assists the Evaluation Group Director and Chief Controller in maintaining 24-hour direction of the test.

(3) Field Controllers.

(a) Direct the orderly execution of scenario events.

1. Execute orders to start, stop, accelerate, slow down, change or re-run scenario events.

2. Make "on the spot" correction of any deviation from the scenario and inform control headquarters of any deviation that cannot be corrected.

3. Keep control headquarters informed of the status of the exercise, including performance as scheduled, deviations from the schedule, corrections accomplished, and corrections recommended. Recommend procedures or changes in procedures to facilitate data collection or control and location of test units.

4. Inject messages or other information into troop channels as required to support the scenario.

5. Assist in the enforcement of security regulations.

6. Assist in the enforcement of safety regulations.

(b) Supervise player troops.

1. Ensure troops' adherence to scenario.

2. Ensure troops' adherence to doctrine being tested.

3. Maintain maximum realism by ensuring troops follow acceptable military procedures, prevent shortcuts made possible by test conditions, and coordinating with aggressor commanders so that aggressor actions are realistic.

4. Assure that collectors and visitors do not compromise tactical integrity.

5. Inform test troop commanders of any necessary changes in the scenario and ensure corrections to the scenario are followed.

(c) Assist in data collection.

1. Keep data collectors informed of any changes in the scenario.

2. Collect test data as directed.

(d) Keep a record of actual events.

1. Acknowledge to control headquarters that events were properly executed and occurred as scheduled.

2. Record any scenario deviation in sufficient detail for both immediate communication to control headquarters, and also for any required debriefings.

3. Record any personal judgements or observations about the tested concepts that might be useful to the Analysis Section in forming conclusions or recommendations.

3. TRAINING: Detailed training aspects are contained in Annex F.

a. Individual and Unit Training of Player Troops. Personnel of test and aggressor units must be MOS qualified and have participated in unit training appropriate for their assigned skill level. If this condition is not met, the data generated by the test can be challenged as to its validity. This training is the responsibility of the individual unit commanders.

b. Pilot Test. The pilot test is conducted just prior to the troop test. It is used as a vehicle to bring player troops up to relatively high familiarity with both the equipment and the control procedures. As such, the pilot test serves a dual purpose; reduces the possibility that the learning factor is an element that could bias test results, and it serves as a final check on the adequacy of control, collection and evaluation procedures. Improper and inadequate aspects of the test can be identified in the pilot test as requiring additions or modifications. Changes can be made as required and incorporated in the various sections in time to permit their use during the troop test.

4. CONTROL PROCEDURES:

a. Organization. The control staff should be divided into two groups: one to control friendly player troops and the other to control aggressor units. There will be control representatives at each battalion headquarters, at each company headquarters and with each platoon for the friendly battalions. Officers assigned to these positions will be higher or equal in rank to the tested element officer at each successive level. A controller must accompany each assigned friendly action including small patrols. Sufficient enlisted support should be planned to provide transportation, and communications for the controllers. A special light vehicle detachment and a special signal support detachment have been provided for in Annex A. A control radio net must be established and maintained. A suggested control radio net is outlined in Appendix 2.

b. Control of Friendly Units. Control must have the capability to control the sequence and speed of the test troops to ensure that coordinated actions occur as planned, and that all planned events take place. Inasmuch as it is desired that the actions of the friendly units be as tactically realistic as possible, direct interference with friendly action by controllers will be avoided whenever possible. If it is desired to speed up or slow down the action at points during the test, this can be accomplished by assessment of casualties or the introduction of intelligence information that would affect the action of the friendly battalion. Controllers with the test companies and platoons will keep control headquarters continually posted on their positions and the events that occur. At times, such as an engagement between friendly and aggressor units, a controller may have to intervene in the role of "referee" (for example, to declare an administrative release of prisoners so that later scenario events can take place). Field controllers at platoon and company level will take immediate corrective action when it appears that the unit they are monitoring

is straying from the planned scenario. They will report such actions immediately and await decision from the Control Staff on whether to interfere or not. An SOP should be prepared for field controllers and presented during their training period. Contingencies not provided for in the SOP will be decided by the Chief Controller at the time they occur.

c. Control of Aggressors. Control of aggressor units must be more stringent than that of friendly forces. Aggressor units must arrive at the places and times stipulated by the detailed scenario to ensure the required events and situations occur as planned to generate necessary data. Controllers monitoring aggressor units will keep control headquarters constantly posted on unit positions and on other necessary information. Controllers will report and take corrective action to ensure that aggressors perform as a tactical unit. They too must try to keep the action as realistic as possible; however, there will be many situations requiring administrative moves or halts in the action which will involve the suspension of the requirement for this realism. It is emphasized that during actual operations, aggressor should move and operate with the same stealth as would be expected from an actual enemy. For the most part, aggressor action will be in small patrols with the option of some independent action. It is preferred that the controller assigned to accompany each patrol be a commissioned officer, since it is anticipated that there will be many situations calling for a decision in the field for which an officer would be preferred. Aggressor squad and platoon leaders will be assigned the responsibility to act as controllers for their units when operating independently and there is no controller available.

d. Controller Procedures. The controllers will be provided with extracts from the scenario that cover the actions they are concerned with. They will also receive periodic instructions from control headquarters on the expected events and actions. Care must be taken not to divulge scenario plans to friendly forces. Controllers will be provided with maps and necessary forms with which to keep a detailed record of all moves, deviations from the scenario, encounters, etc., that their units experienced each day. Controllers will also be present in some places not specified by the example in Appendix 3. In general, these are permanent control points such as battalion headquarters, with the S2, S3, air controllers and so on. With occasional exceptions due to scenario constraints, all controllers will be functioning as controllers at all times. Aggressor controllers will act as advisors and decision makers only when problems arise since the aggressor squad, platoon and company commander will be trained to command and control their own units. All controllers should be experienced in the

operations they are required to control. Armor officers should control armor; artillery officers, artillery; etc. There will also be occassions when controllers experienced in one area of operations will have to control attached elements of different specialties. Whenever this is going to be required, the controllers concerned should have some special training. The officers of the units involved in the test will be responsible for the safety of their men; however, the controllers should assist them in this whenever and wherever, and to whatever extent necessary, regardless of other duties.

e. Scenarios. Scenarios are contained in Annex I.

5. DETAILED CONTROL PLAN: A detailed control plan must be developed by the Test Director. The detailed control plan is based on the final detailed scenarios. Inasmuch as the final scenarios are to be developed at the test site, as an aid to the Test Director, a sample detailed control plan based on one of the proposed scenarios has been incorporated into this plan of test (Appendix 3).

Appendices
1--Control Section Organization
2--Control Radio Net
3--Detailed Control Plan

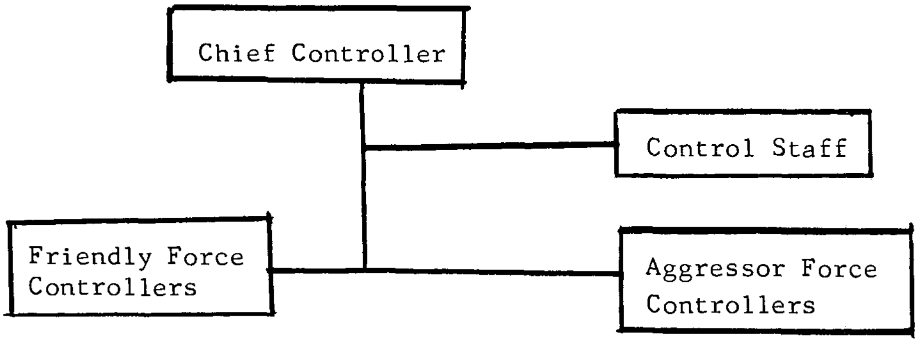
DISTRIBUTION: Same as basic plan

APPENDIX 1 TO ANNEX H TO PART I - STANO II TEST
CONTROL SECTION ORGANIZATION

CONTROL SECTION ORGANIZATION

1. PURPOSE: This appendix outlines the organization of the Control Section.

2. ORGANIZATION:



3. FRIENDLY FORCE: Assignment of controllers to the friendly force is envisioned as follows:

	CONTROLLERS
Battalion Headquarters	1
Combat Support Company Headquarters	1
Reconnaissance Platoon	1
Surveillance Section	1
Mortar Section	1
Rifle Company Headquarters	2
Rifle Platoon (3)	3
Weapons Platoon	1
Tank Platoon	2
Armored Cavalry Platoon Headquarters	1
Armored Cavalry Platoon	2
Airlift Platoon	1
Field Artillery 105mm Battery	2
Battalion Fire Direction Center	1
*Sensor Controller-Collectors (NCO's w/radios)	40
Sub Total	60

NOTE:
*Requirement imposed by current security regulations

4. AGGRESSOR FORCE: Assignment of controllers to the aggressor force is envisioned as follows:

Rifle Company Headquarters		2
Rifle Platoon (3)		6
Weapons Platoon		2
	Sub Total	10
	TOTAL	70

NOTE:

The above is a basic breakdown of the field controllers; however, it is anticipated that certain portions of the test will require a realignment to insure that the scheduled activity is adequately covered by field controllers. Realignment of the field controllers to conform to activities called for by the scenario is the responsibility of the Chief Controller.

The field controllers should be branch oriented, e.g., infantry officers assigned as controllers to infantry units. Those assigned to the airlift platoon should be rated pilots.

DISTRIBUTION: Same as basic plan

CONTROL RADIO NETS

1. PURPOSE: This appendix contains the suggested control radio nets to be used during the conduct of STANO II Preliminary Test.

2. NETS:

a. It is envisioned that the Chief Controller will exercise his responsibilities through two individuals - a Chief Friendly Force Controller and a Chief Aggressor Force Controller. Two control radio nets are suggested as follows:

(1) Friendly Force Control Radio Net (Tab A).

(2) Aggressor Force Control Radio Net (Tab B).

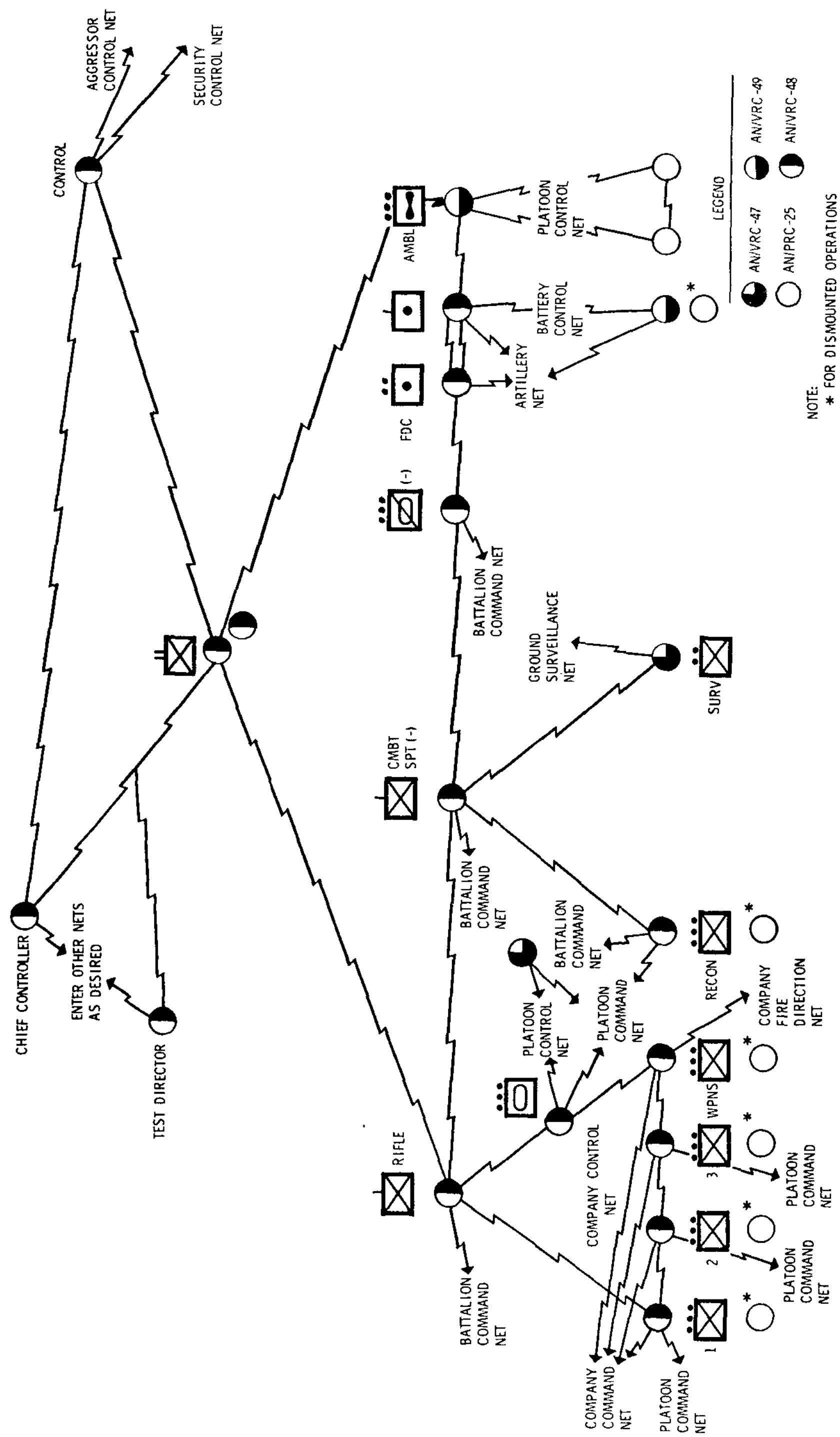
b. In order to conform to current security regulations, a Security Control Radio Net is also recommended. This net will be designed to maintain radio communication among the security NCO maintaining surveillance over the sensor equipment (Tab C).

Tabs
A--Friendly Force Control Radio Net
B--Aggressor Force Control Radio Net
C--Security Control Radio Net

DISTRIBUTION: Same as basic plan

FRIENDLY FORCE CONTROL RADIO NET

FRIENDLY FORCE CONTROL RADIO NET

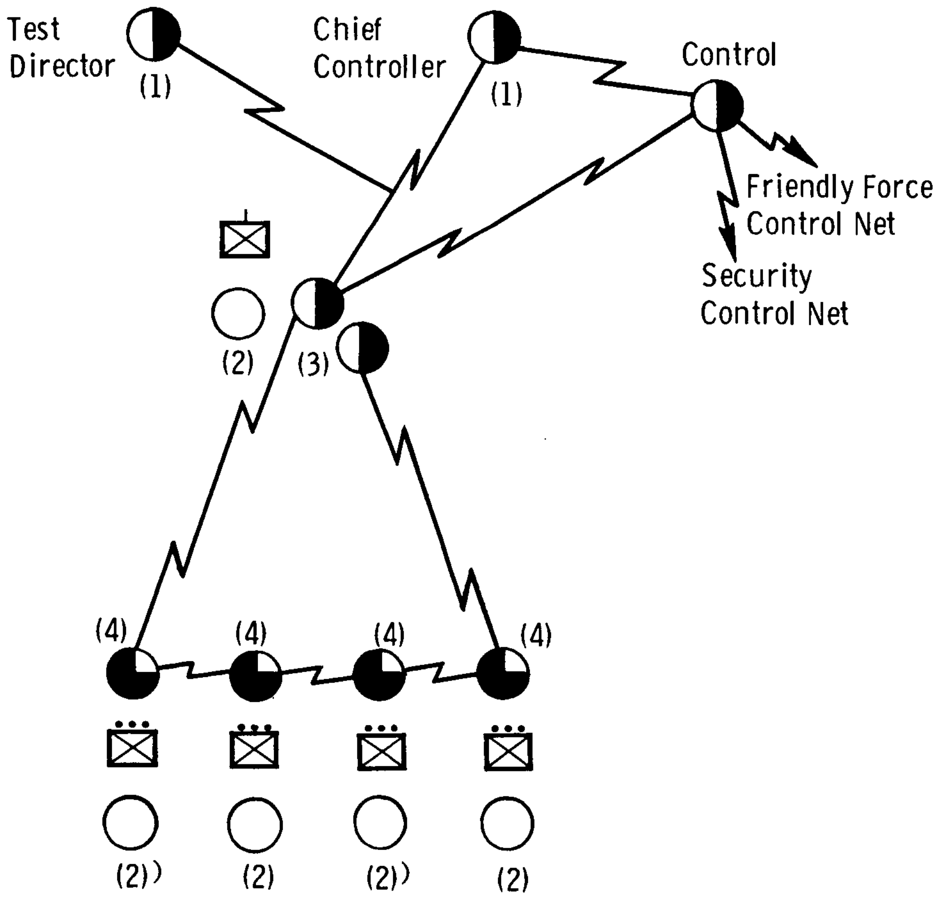


DISTRIBUTION: Same as basic plan

AGGRESSOR FORCE CONTROL RADIO NETS

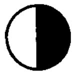
1. PURPOSE: This tab contains a suggested aggressor force control radio net.

2. RADIO NET:

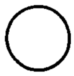


LEGEND

AN/VRC-49 

AN/VRC-48 

AN/VRC-47 

AN/PRC-25 

NOTES:

(1) Enter other nets as desired

(2) For dismounted operations

(3) Also monitors the company command net

(4) Also monitors the respective platoon command net

DISTRIBUTION: Same as basic plan

TAB C TO APPENDIX 2 TO ANNEX H TO PART I - STANO II TEST
SECURITY CONTROL RADIO NET

SECURITY CONTROL RADIO NET

1. PURPOSE: This tab contains a suggested security control radio net.

2. RADIO NET:

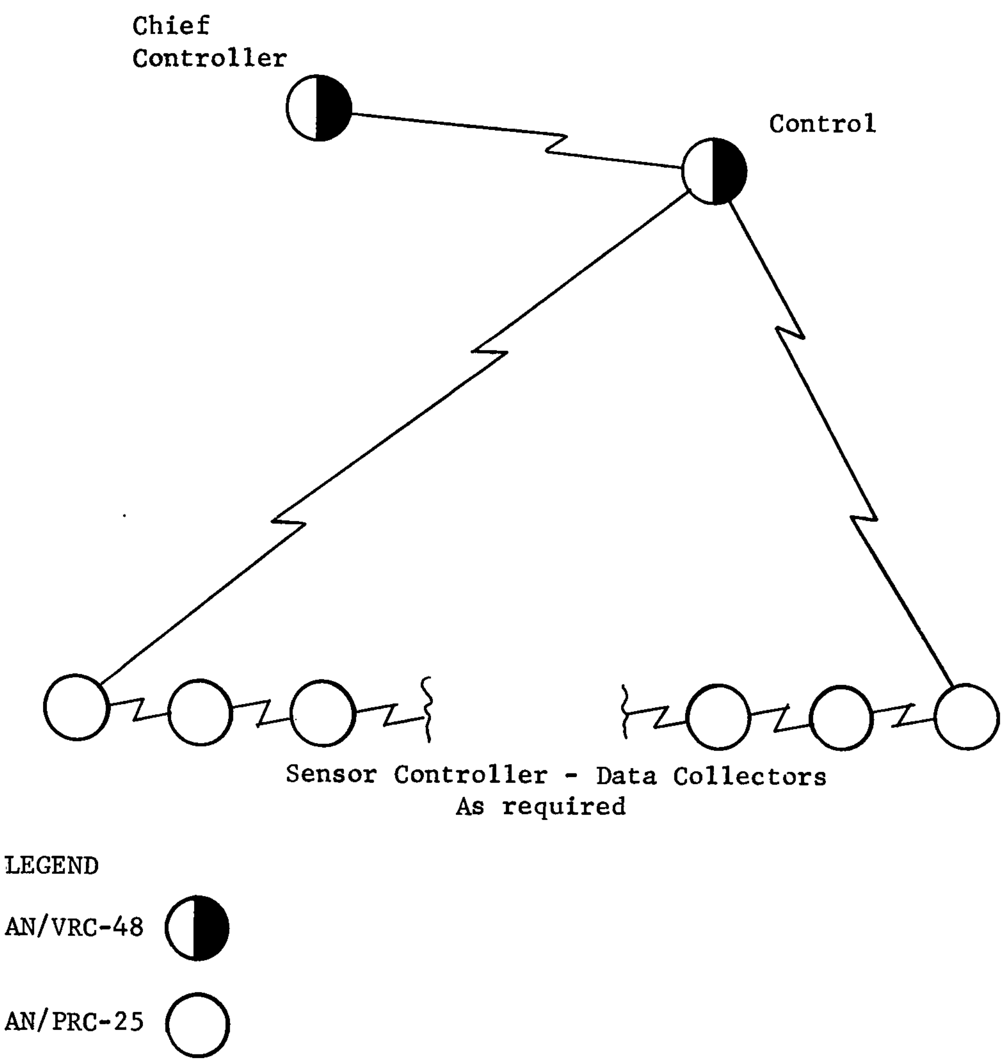


Figure 44. Security Control Radio Net

DISTRIBUTION: Same as basic plan

DETAILED CONTROL PLAN

1. PURPOSE: This appendix contains a sample control plan for D Day (1st Day) of Scenario #1.

2. GENERAL: The final control plan is dependent on the final scenarios. At the present time, the final detailed scenarios cannot be written, and, consequently, the final control plan cannot be prepared. This sample detailed control plan has been developed as an aid to the Test Director for the development of the final control plan.

3. DEVELOPMENT OF THE FINAL CONTROL PLAN: Certain precautions and constraints must be observed when writing the final control plan. The schedule of controller operations must take into account the following:

a. Actual controllers must be specified by code, call sign, or letter.

b. All time-controlled actions must occur when scheduled. If the time schedule is not met, it must be reported to control headquarters.

c. All controllers should keep a log for each 24-hour period. Each entry must indicate times for events that occurred. The controller will submit this log to the analysis group each morning.

d. The control plan must indicate specific times for all events.

e. Controllers will have training and independent means of insuring proper orientation with regard to location.

f. Markers and stakes should be placed wherever necessary, prior to the test, to insure proper location, to control field of view, and to insure line-of-sight or non-line-of-sight capability as required.

g. Map overlays should be produced and distributed to controllers as required.

h. Markers should be placed by both friendly and aggressor controllers as required, during the test, and checked the next day.

i. Each controller should have:

(1) His portion of control plan.

(2) A copy of the complete scenario.

(3) Clipboard.

(4) Red filtered flashlight.

(5) Night vision equipment as available and required.

(6) Watch with luminous dial.

(7) Compass.

(8) Jeep with driver as required.

(9) Radio with operator.

(10) Markers and stakes as required.

4. DETAILED CONTROL PLAN: This is a sample of the detailed control plan for D Day (1st Day), scenario #1. All locations are based on the terrain model contained in Appendix 2 to Annex I (Figure 45).

a. Control Actions for Battalion Headquarters. The controllers assigned to Battalion Headquarters are designated as follows:

Controller H - Chief Battalion Controller
Controller HI - Assistant Battalion Controller

TIME	ACTION
1000	- Controller H - Insures that battalion commanding officer issues order for occupation and preparation of battalion base camp in Area 1.
1030	- Controller H - Monitors order by Bn CO for reconnaissance missions to take place at 1300 hours.
1300	- Controller H - Insures Bn CO issues action order to start reconnaissance missions. Controller accompanies Bn CO during aerial reconnaissance of area of operations; aircraft is to return to battalion command post at 1430 hours.
1400	- Controller HI - Insures Battalion S2 receives aerial reconnaissance report of aggressor activity in Areas 3,7,8, and 9.

TIME	ACTION
1500	- Controller H - Monitors battalion warning order to Airmobile Platoon. Unit is to conduct evening reconnaissance and surveillance missions.
1730	- Controller HI - monitors debriefing of afternoon reconnaissance missions.
2000	- Controller H - Insures Bn CO issues action order, to conduct surveillance mission in Area 3. Airmobile Platoon is to conduct mission with airborne searchlight.
2130	- Controller HI - Insures that Bn S2 has received intelligence report of enemy activity in Area 3. If intelligence is not derived by actual aerial reconnaissance then controller will inject simulated intelligence message into play of problem.
2145	- Controller H - Monitors warning order for airlift of Co A into landing zone Area 3. (Note: One platoon is to be airlifted and two platoons are to be transported administratively by ground transportation.
2300	- Controller H - Insures Bn CO issues action order for airlift of Pathfinder Team to landing zone in Area 3. Controller also insures departure of 2nd and 3rd Platoons of Co A.
2400	- Controller H - Insures Bn CO issues action order for airlift of 1st Platoon, Co A to landing zone.
0100	- Controller H and HI - Insures Bn CO receives message from Co A requesting additional troop support.
0105	- Controller H - Insures Bn CO issues fragmentary order for movement of Armored Cavalry Troop to Area 3 to reinforce Co A. Unit to arrive in area at 0145 hours.
0215	- Controller H - Monitors order of Bn CO for Co A to return to battalion base camp in Area 1.
0300	- Controller H - Monitors order of Bn CO for all units to reconsolidate battalion perimeter defenses.

b. Control Actions for Company A. The controllers assigned to Company A are designated as follows:

Controller A - Company A Controller
Controller A1 - Assistant Company A Controller
Controller A2 - 1st Platoon Controller
Controller A3 - 2nd Platoon Controller
Controller A4 - 3rd Platoon Controller
Controller A5 - Weapons Platoon Controller

TIME	ACTION
1030	Controller A - Insures company commander receives warning order to conduct reconnaissance missions in Area 1.
1300	Controller A - Remains with the company commander at the company command post.
1300	Controller A2 - Accompanies 1st Platoon which joins Armored Cavalry Troop for route reconnnaissance in Areas 2 and 3. Insures that : a. Sensor array 4 is emplaced along H2 west of V5. b. Insures return to Battalion Base Camp by 1700. c. Insures that platoon is debriefed at 1730. Unit is to avoid contact with the aggressor and to report any unusual activity.
1300	Controllers A3 & A4 - Accompany dismounted daylight reconnaissance in Area 1 with 2d and 3d Platoons. The assigned controllers remain with their platoons and insure return to battalion base camp at 1700.
1700	Controllers A2, A3, & A4 - Insure platoons return to base camp.
1730	Controllers A2, A3, & A4 - Insure all platoons are debriefed by Bn S2.
2145	Controller A - Insures Company A Commander receives warning order for airlift to Area 3.
2145	Controller A2 - Insures 1st Platoon receives warning order for airlift to Area 3.

TIME	ACTION
2145	- Controllers A3 and A4 - Insure 2d and 3d Platoons receive warning order to be transported by ground to attack aggressor in Area 3.
2330	- Controllers A3 and A4 - Insure 2d and 3d Platoons are transported (ground transportation) to LZ in Area 3. Must be there at 0015. NOTE: This is an administrative move.
2400	- Controller A2 - Insures 1st Platoon is airlifted to landing zone in Area 3 to arrive by 0015.
0030	- Controllers A, A2, A3 and A4 - Insure that attack on suspected aggressor road mining force begins at 0300 at intersection of V5 and H2.
0100	- Controller A - Insures that Company A Commander requests additional support from battalion headquarters at this time.
0215	- Controllers A, A2, A3 and A4 - Aggressors should break off attack and exfiltrate at this time. Company A plus Armored Cavalry return to battalion base camp.
0300	- Controllers A, A2, A3 and A4 - Insure platoon commanders receive order to reconsolidate battalion perimeter defenses in base camp.

c. Control Locations for Combat Support Company. Controllers assigned to the Combat Support Company are designated as follows:

Controller C - Combat Support Company Headquarters
Controller R - Reconnaissance Platoon Controller
Controller S - Surveillance Section Controller
Controller AT - Anti Tank Platoon Controller
Controller M - Mortar Platoon Controller

TIME	ACTION
1030	- Controller C - Insures CO, Cbt Spt Co receives warning order for reconnaissance platoon to conduct afternoon reconnaissance mission.
1030	- Controller R - Insures Reconnaissance Platoon receives warning order for route reconnaissance in Area 1. Mission to start at 1300 hours.

TIME	ACTION

1300 - Controller R - Rides in platoon leaders vehicle and insures that:

a. Reconnaissance Platoon conducts reconnaissance in Area 1.

b. Emplaces sensor array 1 on route V1 north of route H2.

c. Emplaces sensor array 2 on route V1 south of route H2.

Platoon is to avoid contact with aggressor, and will report sighting and location of any aggressor force. Platoon is to return to base camp at 1600 hours.

1600 - Controller R - Insures that Reconnaissance Platoon returns to battalion base camp.

1730 - Controllers R - Oversees debriefing of afternoon reconnaissance patrols.

0200 - Controller R - Monitors platoon actions during aggressor attack of base Camp.

0300 - Controller C - Insures all platoon commanders receive order to reconsolidate perimeter defenses in base camp.

d. Control Actions for Armored Cavalry Platoon. Controllers assigned to the Armored Cavalry are designated as follows:

Controller T - Troop Controller
Controller T1 - 1st Platoon Controller
Controller T2 - 2nd Platoon Controller

TIME	ACTION

1030 - Controller T - Insures Armored Cavalry Troop Commander receives warning of route reconnaissance to take place at 1300 in Areas 2 and 3. Reconnaissance is to be conducted in conjunction with 1st Plat, Co A.

TIME	ACTION
0105 -	Controllers T, T1 and T2 - Accompany Armored Cavalry Platoon along H2 to Area 3 to reinforce Company A in the attack. Insure arrival at Company A position at 0145.
0200 -	Controllers T, T1 and T2 - Monitor attack of aggressor force at ambush site in Area 3.
0215 -	Controllers T, T1 and T2 - Insures unit receives radio message ordering return to battalion base camp in Area 1.
0300 -	Controllers T, T1 and T2 - Monitor actions of unit during reconsolidation of battalion perimeter defense.

e. Control Actions for Aviation Operations. Controllers assigned to aviation type units are designated as follows:

Aviation Airmobile Platoon:

Controller G - Platoon Controller

TIME	ACTION
1030 -	Controller G - Insures that Airmobile Company Commander receives warning order for battalion area reconnaissance and sensor emplacement in Areas 4 and 5. Both missions to take place at 1300.
1300 -	Controller G - Rides in aircraft during surveillance mission and ensures that:

a. Take off is at 1300 hours.

b. Surveillance is confined to Areas 2, 3, 4 and 5.

c. Sensor string 5 is dropped along V5 at H4 in Area 4.

d. Sensor string 6 is dropped along V6 at H5 in Area 5.

e. Sensor string 7 is dropped along V5 at H5 in Area 5.

Controller G - Insures that Battalion Commander is supplied with aircraft for reconnaissance of area of operations. Aircraft is to return to battalion command post at 1430 hours.

TIME	ACTION

1500 - Controller G - Insure that Aerial Weapons Company and the Airmobile Company receive warning to prepare to conduct armed aerial reconnaissance in Areas 2 and 9 from 1900 to 2030, and aerial surveillance with airborne searchlight in IR mode in Area 3 from 2100 to 2230, respectively.

2000 - Controller G - Accompanies unit in the conduct of surveillance with airborne searchlight IR mode in Area 3.

2145 - Controller G - Insures that aviation element receives warning order to prepare to lift pathfinder team to landing zone in Area 3 at 2330 and one platoon of company A at 0030.

2300 - Controller G - Takes off to deliver Pathfinder Team at 2330 to landing zone in Area 3.

2400 - Controller G - Accompanies airlift of 1st Platoon, Company A to landing zone in Area 3 and insures that they arrive by 0030.

f. Control Action for Aggressor Rifle Company. Controllers assigned to Aggressor Rifle Company are designated as follows:

Controller 10 - Chief Company Controller
Controller 11 - Assistant Company Controller
Controller 12 - 1st Platoon Controller
Controller 13 - 2nd Platoon Controller
Controller 14 - 3rd Platoon Controller
Controller 15 - Weapons Platoon Controller

TIME	ACTION

1300 - Controller 12 - Insures 1st Platoon moves to vicinity of route H2 and V5 and selects ambush site along H2 east of V5. Unit is to remain in close proximity to ambush site.

Controller 13 - Insures 2nd Platoon conducts a covert route reconnaissance in Area 2 along route H2 and moves on route H2 east to route V5, where it joins the 1st Platoon.

1500 - Controller 14 - Insures 3rd Platoon departs base camp area at 1500 hours and conducts route reconnaissance in Areas 1 and 2 along route H1. Unit is to return to base camp at 1700 hours.

TIME	ACTION
1700 -	Controller 14 - Insures that 3rd Platoon returns to base camp.
1900 -	Controller 14 - Insures that 3rd Platoon moves east on route H1 from aggressor base camp in Area 2 and establishes attack position against opposing force base camp in Area 1.
	Controller 15 - Insures that Weapons Platoon moves west on route H1 in conjunction with Aggressor 3rd Platoon and establishes attack position against opposing force base camp in Area 1.
2000 -	Controller 13 - Insures that 2nd Platoon conducts road mining operations along route H2 near intersection with route V5.
0030 -	Controller 13 - Insures that 2nd Platoon maneuvers to draw opposing forces into ambush.
0045 -	Controller 12 - Insures that 1st Platoon, in conjunction with Aggressor Cavalry Platoon, conducts an ambush on opposing forces in Area 3 on route H2 west of intersection with route V5.
0200 -	Controller 14 - Insures that 3rd Platoon attacks opposing force base camp in Area 1.
0215 -	Controller 12 - Insures that 1st Platoon breaks contact with opposing force. Platoon is to move south on route V5 in conjunction with 2nd Platoon, then west on route H1 to base camp in Area 1.
	Controller 13 - Insures that 2nd Platoon breaks contact with opposing force. Platoon is to move south in route V5 in conjunction with 1st Platoon, then west on route H1 to base camp in Area 2.
0300 -	Controller 14 - Insures that 3rd Platoon breaks contact and withdraws from attack on base camp in Area 1. Unit is to return to aggressor base camp in Area 2 in conjunction with Weapons Platoon.

TIME	ACTION
	Controller 15 - Insures that Weapons Platoon breaks contact and withdraws from attack on base camp in Area 1. Unit is to return to aggressor base camp in Area 2 in conjunction with 3rd Platoon.

DISTRIBUTION: Same as basic plan

ANNEX 1 TO PART I - STANO II TEST
PROPOSED SCENARIOS

PROPOSED SCENARIOS

1. PURPOSE: This annex contains the proposed scenarios to be used in the troop test. These proposed scenarios may be modified by the Test Director as required when actual terrain for the test has been identified.

2. GENERAL:

a. Proposed scenarios have been developed to test current and proposed doctrine for night operations for battalion size operations in nonconventional operations through use of STANO equipment. These scenarios have been developed in accordance with the proposed doctrine contained in Annex B.

b. A proposed detailed schedule of events in chronological order and a proposed detailed time schedule by unit and major event (Appendix 1) for the first day of Scenario #1 has been prepared as an aid to the Test Director in the development of the final Scenarios.

c. An abstract terrain model (Appendix 2) and a proposed live fire exercise (Appendix 4) were developed to assist in development of the final scenarios.

3. SCENARIO: A basic scenario has been developed for the test encompassing the Southeast Asia situation. A variation on the basic scenario proposed for the SEA situation is suggested between the test runs to preclude test troops from having foreknowledge of the events. The runs will be equivalent in content but will differ in schedule of events. The final scenario should be keyed to specific terrain, and closely parallel current Southeast Asia operations. The proposed scenario was applied to an organization that closely parallels the currently authorized USARV Infantry Battalion and is contained in Appendix 3.

4. PROPOSED TACTICAL CONTEXT:

a. The tactical situation for the Southeast Asia situation is as follows: The battalion will be assigned an Area of Operations approximately 10 KM by 10 KM. Insurgent forces of approximately company size are known to be operating in this area. Within its A.O., the battalion will have three tasks:

(1) To provide security to areas under government control.

(2) To extend government control into contested areas.

(3) To destroy the insurgent's capability to fight by sealing off avenues of supply, destroying base area systems, and by finding, fixing and destroying insurgent forces.

The mission of the battalion will be to conduct a combat sweep of its area of operation. To accomplish this mission the test force will consist of a skeletonized infantry battalion plus a representation of divisional support. Scenario action will take place over a period of five days and four nights. For test purposes, the majority of test troops will be occupied only from Monday morning through mid-afternoon Friday. Allowing them a weekend rest period. Although the battalion will be conducting operations on a 24 hour basis, primary emphasis will be placed on the events which occur during night time or periods of limited visibility. It is recognized that the frequency and intensity of activity which has been telescoped to fit into these five days would normally occur during a much longer period of time. This concentration of activity is necessary to generate the data required. The terrain for the maneuver area is to be representative of the type of terrain U.S. forces have encountered in Southeast Asia.

b. Each of the five (5) test days has been divided into four (4) six hour blocks as follows:

(1) 0600 - 1200 Morning

(2) 1200 - 1800 Afternoon

(3) 1800 - 2400 Evening

(4) 2400 - 0600 Night

A day's activity will begin at 0600 hours one day and last until 0600 hours of the next day. Test days have been designated as D Day, D+1, D+2, D+3 and D+4 with an administrative day designated as D-1.

5. <u>AGGRESSOR</u>: The aggressor force will consist of a rifle company. This unit will perform the type of action typical of insurgent forces, and will perform essentially the same type operations during each of the test runs. The number of repetitions for each of these type operations will be determined by the Test Director to insure sufficient data has been collected to answer essential elements of analysis. Aggressor action will be used to provide activity for detection by surveillance units, to probe friendly defenses and to test the relative abilities of the different organizations to engage

a foe. During the course of the five days, the following types of action will take place.

a. A major attack on the opposing unit.

b. A major defense against a reinforced company attack.

c. Convoy ambushes.

d. Landing zone ambushes.

e. Ambushes of friendly patrols.

f. Road mining.

g. Probing attacks on the rifle company's perimeter.

h. Probing attacks on the artillery battery.

i. Mortar attacks.

j. Supply convoys.

k. Motor and foot marches.

l. To represent how an enemy may react to the introduction of the new STANO equipment for each test run, aggressor movement on D Day will be conducted in ignorance of the new capability, but will become increasingly covert during succeeding days.

Appendices
1--Proposed Detailed Scenario for D Day (1st Day, Scenario #1)
2--Terrain Model
3--Scenario #1 (Southeast Asia)
4--Proposed Live Fire Exercises

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PROPOSED DETAILED SCENARIO FOR D DAY (1st DAY, SCENARIO #1)

1. PURPOSE: This appendix was developed as a guide for use by the Test Director in developing the detailed actions required for each day of the four scenarios.

2. PROPOSED DETAILED SCENARIO FOR D DAY (1st DAY, SCENARIO #1):

EVENT	DTG	FROM	TO	METHOD	TEXT
1	0700	Contr	Test Units, Agg Forces	Action	Assemble in garrison area for movement to field location.
2	0800	Contr	Test Units, Agg Forces	Action	Depart garrison assembly area for field locations.
3	1000	Bn	Test Units	Action	Occupation and preparation of battalion base camp in Area 1.
4	1000	Contr	Agg Units	Action	Occupation and preparation of base camps in Areas 2 and 7.
5	1000	Contr	Bn	Msg	Battalion commander conducts aerial reconnaissance of battalion area of operations at 1300 hours.
6	1030	Bn	Cmbt Spt Co Recon Plat- Co A - Arm Cav PLT - Ambl PLT -	Warning Order	Afternoon missions at 1300 hours. Recon Plat - Reconnaissance in Area 1. Co A - Reconnaissance in area 1. Arm Cav PLT - Route reconnaissance in Areas 2 and 3. Ambl PLT - Reconnoi-

EVENT	DTG	FROM	TO	METHOD	TEXT
					ter battalion area of operations and emplace sensors in Areas 4 and 5.
7	1300	Bn	Ambl PLT	Action	Provide battalion commander with aircraft for reconnaissance of area of operations. Return to battalion command post at 1430 hours.
8	1300	Bn	Ambl PLT Ground Surveillance Section	Action	Conduct aerial surveillance in Areas 2,3,4 and 5. Drop sensor string 5 along V5 at H4 in Area 4. Drop sensor string 6 along V6 at H5 and sensor string 7 along V5 at H5 in Area 5.
9	1300	Bn	Recon Plat	Action	Recon Plat conducts area reconnaissance in Area 1. Supports Emplacement of sensor array 1 at V1 north of H2 and sensor array 2 on V1 south of H2. Avoid contact with aggressor. Report sighting and location of any aggressor force. Return to base camp at 1600 hours.

EVENT	DTG	FROM	TO	METHOD	TEXT
10	1300	Bn	Arm Cav PLT Co A	Action	Arm Cav PLT, with 1st Plat, Co A perform route reconnaissance through Areas 2 and 3 along routes H2 and return via H1. Emplace sensor array 4 along H2 west of V5. Avoid contact with aggressor. Report unusual activity. Return to base camp at 1700 hours.
11	1300	Contr	1st Agg Co	Action	1st Plat moves to vicinity of V5 and H2 and selects ambush site along H2 east of V5. Remain in close proximity to ambush site. 2d Plat conducts covert route reconnaissance in Area 2 along H2; moves along H2 east to V5 and joins 1st Plat. 3d Plat departs base camp area at 1500 hours, conducts reconnaissance in Areas 1 and 2 along H1, and returns to base camp at 1700 hours.

EVENT	DTG	FROM	TO	METHOD	TEXT
12	1400	Contr	Bn S2	Msg	Aerial reconnaissance reports aggressor activity in Areas 7,8,9 and 3. Aggressor patrols sighted in all areas.
13	1500	Bn	Ambl PLT	Warning Order	Ambl PLT - Prepare to conduct aerial surveillance using the airborne searchlight in Area 3 from 2100 - 2230 hours.
14	1730	Recon Elements	Bn S2	Action	Debriefing of afternoon reconnaissance patrols.
15	1900	Contr	1st Agg Co	Action	3d Plat and Wpns Plat travel west on H1 from Area 2 Agg base camp to establish attack position against opposing force base camp in Area 1.
16	2000	Contr	1st Agg Co	Action	2d Plat conducts road mining activity along route H2 near intersection with V5.
17	2000	Bn	Ambl PLT	Action	Conduct aerial surveillance with airborne searchlight.

EVENT	DTG	FROM	TO	METHOD	TEXT
18	2130	Contr	Bn S2	Msg	NOTE: If intelligence is not derived by actual aerial reconnaissance missions or sensor monitoring, a simulated intelligence report will be injected into play of problem stating that an aggressor unit of estimated platoon strength, is conducting road mining along route H2 west of route V5 in Area 3.
19	2145	Bn	Ambl PLT and Co A PFDR Team	Warning Order	Prepare to airlift elements of Co A to landing zone in Area 3 at 0030 hours. (Note: one platoon airlifted and two platoons transported administratively by ground transportation.)
20	2300	Bn	Ambl PLT PFDR Team	Action	Deliver Pfdr Team to landing zone in Area 3 at 2330 hours.
21	2300	Bn	Co A	Action	Transport 2d and 3d Plats to site of landing zone in Area 3. Be in position NLT 0015 hours. (Note: this is an administrative move.)
22	2400	Bn	Ambl PLT Pfdr Team Co A	Action	Airlift 1st Plat, Co A, to landing zone in Area 3. Use ABN searchlights to illuminate the landing zone.

EVENT	DTG	FROM	TO	METHOD	TEXT
23	0030	Bn	Co A	Action	Begin attack on suspected aggressor road mining force estimated to be platoon size in Area 3 at intersection routes V5 and H2.
24	0030	Contr	1st Agg Co	Action	2d Plat maneuvers to draw opposing force into ambush.
25	0045	Contr	1st Agg Co	Action	1st Plat, 1st Agg Co (simulating a reinforced company) conduct ambush in Area 3 on route H2 west of route V5.
26	0100	Co A	Bn	Radio	Meeting with superior aggressor force estimated to be reinforced company. Request additional troop support.
27	0105	Bn	Arm Cav PLT	Frag Order	Move from Area 1 along route H2 to Area 3 and reinforce Co A in the attack. Arrive in area at 0145 hours.
28	0200	Contr	Arm Cav PLT	Action	Attack aggressor force at ambush site in Area 3.
29	0200	Contr	1st Agg Co	Action	3d Plat and Wpns Plat, attack base camp in Area 1.
30	0215	Contr	1st Agg Co	Action	1st and 2d Plats, 1st Agg Co break contact with Co A. 1st and 2d Plats, 1st Agg Co break contact and move south on route V5, then west on H1 to Area 2 base camp.

EVENT	DTG	FROM	TO	METHOD	TEXT
31	0215	Bn	Co A Arm Cav PLT	Radio	Return from Area 5 to battalion base camp in Area 1.
32	0300	Contr	1st Agg Co	Action	3d Plat and Wpns Plat, break contact and withdraw from Area 1 to Agg base camp in Area 2.
33	0300	Bn	all units	Action	Reconsolidate Area 1 battalion perimeter defenses.

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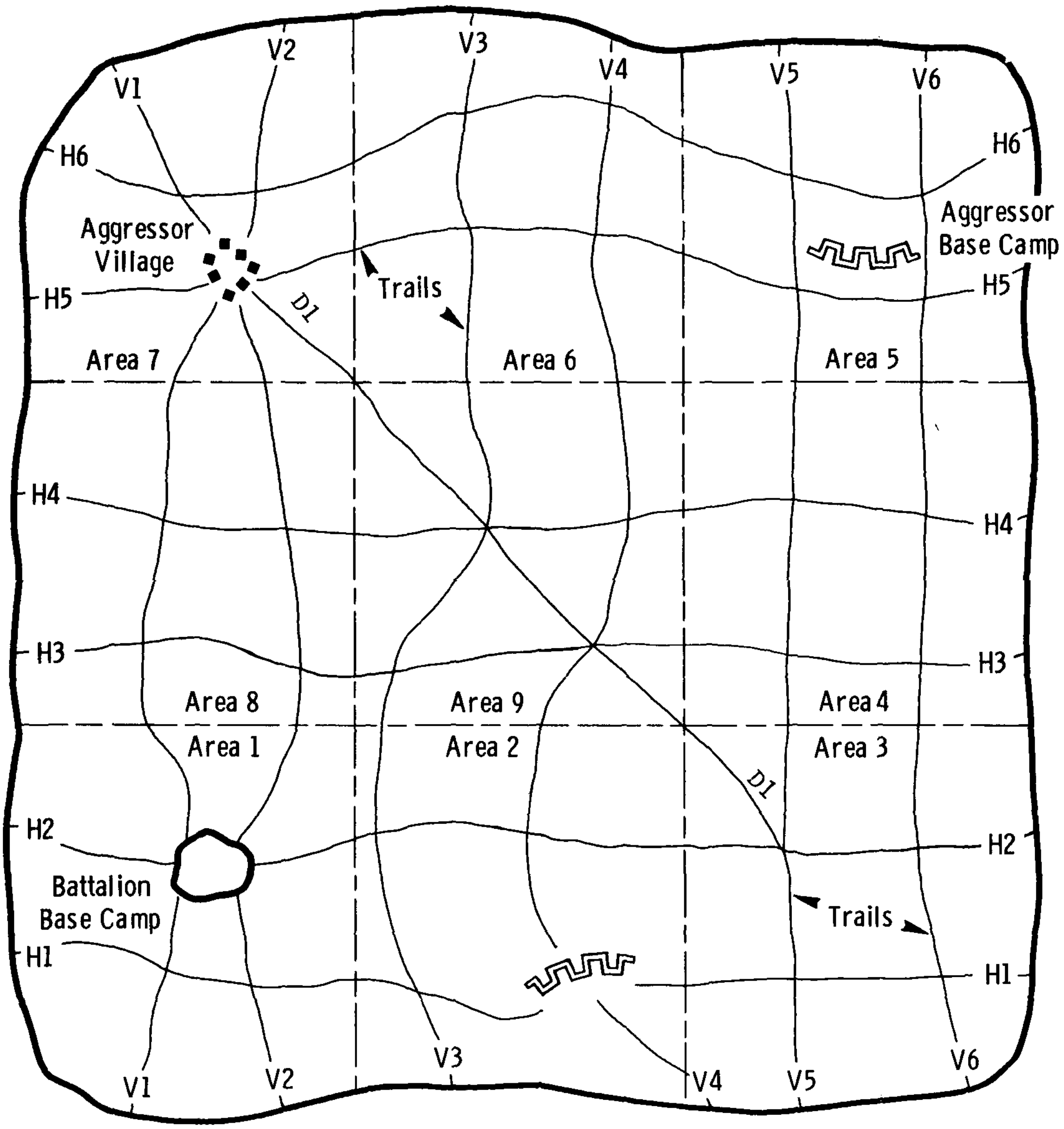
TERRAIN MODEL

1. PURPOSE: The purpose of this appendix is to provide a hypothetical terrain model used in development of proposed scenarios.

2. TERRAIN MODEL:



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SCENARIO (SOUTHEAST ASIA)

1. PURPOSE: This appendix outlines the proposed general and special situations and major event schedule for Scenario #1.

2. PROPOSED GENERAL SITUATION: In late July, large concentrations of enemy troops were reported in Long Khanh Province ten kilometers east-northeast of Bearcat. This information caused grave concern to II Field Force due to the possibility of the enemy mounting a substantial offensive against the Siagon/Long Binh/Bien Hoa complexes from this area. II Field Force initiated a determined intelligence effort in early August to ascertain the enemy's intentions and hence prepare for any contingency. This intelligence effort produced considerable information indicating the enemy may attempt by mid-August to infiltrate in and around the populated areas to launch rocket and ground attacks on the Long Binh/Bien Hoa complex with up to a regimental size force. In addition, the enemy reportedly will simultaneously direct an intense sapper/terrorist/mortar attack against the Tan Son Nhut/Saigon Area. A decision was made to plan immediately for a sizeable U.S. operation to inhibit the enemy movement, inflict maximum personnel casualties and to disrupt their logistical effort.

3. PROPOSED SPECIAL SITUATION: Intelligence reports indicate that during July, company size NVA units had been infiltrating the Long Khanh Province where they joined and were being supported by hard core guerillas indigenous to the area. On ___August 69 the Blue Infantry Division stationed at Bearcat was informed that reliable information and evidence indicated that these NVA units had been instructed to mass forces on ___August 69 to mount a regimental size offensive moving west and southwest from Long Khanh Province into Bien Hoa Province toward Saigon with the mission of conducting rocket and ground attacks. The Blue Infantry Division Commander was instructed, in view of this enemy threat, to conduct an aggressive offensive operation to inhibit movement and inflict maximum casualties to the force. The Division Commander designated two Brigades to establish Bases of Operations on a line northwest from Binh Son to the Long Binh Complex and conduct detailed area searches, reconnaissance in force, and search/destroy missions. After detailed coordination and discussion with the Division Commander, the 1st Brigade was given additional combat support troops to assist in the mission. The 1st Brigade Commander further attached a portion of these troops to the ___Infantry Battalion. (See Troop List, Annex A). The Commanding Officer, ___Infantry Battalion was directed

at 1800 hours, ___August 69 to establish a landing zone and Base of Operations in the vicinity of Binh Son by 1200 hours, ___August 69 and initiate offensive actions NLT 1500 hours, ___August 69. The Battalion Area of Operations extends 10 kilometers by 10 kilometers directly to the east of Long Thanh City. The area covers a portion of the Long Thanh and Binh Son rubber plantations and a vacated air-strip to the east of Binh Son. The Commanding Officer, ___Infantry Battalion was informed by Intelligence that at 1500 hours, ___ August 69, a FAC reported sighting an estimated 300-man size force within the Battalion Area of Operations. He also reported a number of new trails and bunkers in the area. This force was tentatively identified as an element of the ___NVA Regiment. The ___Infantry Battalion (Reinf) began its move early morning of ___August 69 to the assigned area.

4. PROPOSED MAJOR EVENT SCHEDULE FOR SCENARIO:

D-1

TIME/UNIT	EVENT
0600-1200	
Test Units	Unit commanders receive instructions on garrison assembly area, order of march, position to be occupied at battalion base camp, intelligence briefing on aggressor situation and warning order for D-Day activities.
	Unit commanders brief reconnaissance elements and guides on initial positions to be occupied at the site of the battalion base camp in Area 1.
Aggressor Forces	Aggressor forces receive briefing on play of problem and movement to field locations for D-Day.

D-Day

TIME/UNIT	EVENT
0600-1200	
Test Units	Ground units move to garrison assembly area and prepare for move to the field.
	Reconnaissance elements briefed and dispatched to site of battalion base camp in Area 1.

D-Day (Con't)

TIME/UNIT	EVENT
	Ground units move by vehicle (administrative move) to site of battalion base camp and occupy assigned positions.
	Battalion commander assembles subordinate commanders and issues warning orders for afternoon operations.
	Aviation units perform preparation and maintenance of equipment.
	Aviation unit commanders receive warning orders on afternoon operations.
Aggressor Forces	Units move from garrison assembly area to field locations. 1st Aggressor Company moves to site of aggressor base camp in Area 2 along route V4 just north of route H1.
	Perform base camp activities and preparation for afternoon operations.
1200-1800	
Test Units	Battalion commander, conducts aerial reconnaissance of the entire battalion area of operations.
	Battalion headquarters elements conduct staff planning activity, receive and process intelligence.
	Company A conducts area reconnaissance through Area 1. Supports emplacement of sensor arrays.

D-Day (Con't)

TIME/UNIT	EVENT
	Armored Cavalry Platoon and Recon platoon conduct route reconnaissance through Areas 2 and 3. Support emplacement of sensor arrays by Bn Surveillance Section.
	Airmobile Platoon conduct aerial surveillance over battalion area of operation. Airdrop of sensor strings.
	Artillery Battery prepares firing position and provides fire support for possible operations.
Aggressor Forces	1st Platoon, 1st Aggressor Company conducts covert reconnaissance of Area 3.
	Platoon selects ambush site for night's operation and remains at ambush site.
	2d Platoon conducts covert reconnaissance of Area 2, and moves to join 1st Platoon at ambush site in Area 3 at 1600 hours.
	3d Platoon conducts covert reconnaissance of Area 1. Selects site for night attack position.
1800-2400	
Test Units	In response to a report of an enemy road mining operation Company A is airlifted to Area 3 to conduct an attack. Company A is ambushed by an enemy force of superior strength, and requests reinforcements. The Armored Cavalry Plt is alerted to move to Area 3 to assist Company A.
Aggressor Forces	2d Platoon performs road mining activities along route H2 west of V5. When attacked by opposing

D-Day (Con't)

TIME/UNIT	EVENT
	forces 2d Platoon maneuvers to draw them into ambush set by 1st Platoon. 3d and Weapons Platoons move from Area 2 base camp along route H1 to attack position in Area 1.
2400-0600	
Test Units	Armored Cavalry Platoon is dispatched to Area 3 to reinforce Company A. Units at the battalion base camp defend against aggressor probing attack. When the Armored Cavalry Plt and Company A have dispersed the aggressor ambush forces they return to the battalion base camp in Area 1.
Aggressor Forces	1st and 2d Platoons, 1st Aggressor Company engage opposing force. Aggressor force fights for an interval and then withdraws. 1st and 2d Platoons return to Area 2.
	3d and Weapons Platoons conduct probing attack against opposing force base camp in Area 1. Platoons later break contact and withdraw to Area 2.
	D+1
0600-1200	
Test Units	Inspection and reorganization of defensive position.
	Reconnaissance Platoon, Combat Support Company, dispatched on area reconnaissance mission through Area 9.

D+1 (Con't)

TIME/UNIT	EVENT
	Units engaged in night's offensive activities rest.
Aggressor Forces	Units of 1st Aggressor Company rest in Area 2.
1200-1800	
Test Units	Battalion is alerted to move to new base camp in Area 9. Armored Cavalry Platoon provides route security for move of Battalion Headquarters and Headquarters Company(-), Combat Support Company (-) and Company A to Area 9. Aviation elements conduct aerial surveillance over Areas 5,6,7,8 and 9. Sensor strings are air dropped in Areas 6 and 7. Artillery Battery sends reconnaissance party to select site of firing position in Area 9. Reconnaissance Platoon, Combat Support Company, supports emplacement of sensor arrays around site of new battalion base camp in Area 9.
Aggressor Forces	1st Aggressor Company conducts squad size reconnaissance patrols in Areas 1,2, and 9. 1st Platoon selects ambush site in Area 9.
1800-2400	
Test Units	Company A dispatches two platoon size ambush patrols along likely routes of infiltration around Area 9 base camp. With Armored Cavalry Platoon support Artillery Battery moves from Area 1 to Area 9. When ambushed enroute, units break through or neutralize aggressor force and move on to Area 9 base camp.

D+1 (Con't)

TIME/UNIT	EVENT
Aggressor Forces	1st Platoon, 1st Aggressor Company ambushes Artillery convoy, breaks contact and withdraws to join rest of 1st Aggressor Company at site of attack position selected for forthcoming attack on opposing force base camp.
2400-0600	
Test Units	Battalion forces defend against an attacking aggressor force of estimated company strength. As the aggressor withdraws, the Reconnaissance Platoon, Combat Support Company, is dispatched to screen the withdrawing forces. Airmobile Company conducts equipment resupply mission.
Aggressor Forces	1st Aggressor Company and Aggressor attack opposing force battalion base camp in Area 9. Units break contact. 1st Aggressor Company withdraws through Area 8 to Area 7 village.
0600-1200	D+2
Test Units	Battalion commander conducts aerial reconnaissance over Areas 5,6 and 7. Battalion units reconsolidate defensive perimeter. Reconnaissance Platoon, Combat Support Company, returns to Area 9 from screening operations in Area 7.
Aggressor Forces	1st Aggressor Company rest in Area 7 village.
1200-1800	
Test Units	Armored Cavalry Platoon conducts route reconnaissance through Areas 4.5, and 6. 1st Platoon, Company A,

TIME/UNIT	EVENT
	conducts area reconnaissance through Area 7.
Aggressor Forces	1st Platoon, 1st Aggressor Company, moves to Area 5 base camp.
1800-2400	
Test Units	Battalion plans cordon and search operations against Area 7 village. Airmobile Platoon conducts armed reconnaissance over Areas 5,6,7 and 8. 1st Platoon, Company A returns from reconnaissance mission and is debriefed. Reconnaissance Platoon, Combat Support Company, is dispatched to infiltrate area south of Area 7 village and to observe routes of travel leading to village.
Aggressor Forces	1st Platoon, 1st Aggressor Company, conducts patrolling around Area 5 base camp.
	2d Platoon, 1st Aggressor Company conducts patrolling south of Area 7 village to Area 8 and return.
2400-0600	
Test Units	Reconnaissance Platoon, Combat Support Company moves in to form cordon in area south of Area 7 village. Armored Cavalry Platoon moves to join Company A and Reconnaissance Platoon. Cordon is established. Search initiated at dawn.
Aggressor Forces	1st Platoon, 1st Aggressor Company returns from patrolling to Area 5 base camp.

D+2 (Con't)

TIME/UNIT	EVENT
	Elements of 1st Aggressor Company attempt to exfiltrate area once cordon operation is discovered.
D+3	
0600-1200	
Test Units	Reconnaissance Platoon of Combat Support Company, Company A and Armored Cavalry Platoon conduct search of Area 7 village. Subsequently, units return to Area 9 base camp for rest.
	Battalion commander conducts aerial reconnaissance over Areas 5 and 6.
Aggressor Forces	Units in Area 7 village undergo search. 1st Platoon, 1st Aggressor Company improves fortifications of aggressor base camp in Area 5.
1200-1800	
Test Units	Armored Cavalry Platoon conducts route reconnaissance through Areas 4, 5, and 6. Battalion plans attack on Area 5 aggressor base camp. Reconnaissance Platoon, Combat Support Company dispatched to conduct reconnaissance in Area 5. (For the separate live fire exercises participating elements of Company A, Combat Support Company, and Artillery Battery move to impact area to prepare firing positions for live fire exercise).
Aggressor Forces	Aggressor Weapons Platoon, 1st Aggressor Company move to Area 5 base camp. 1st Platoon, 1st Aggressor Company conducts squad size patrols in Area 5. 2d and 3d

D+3 (Con't)

TIME/UNIT	EVENT
	Platoons, 1st Aggressor Company move to impact area to support conduct of live fire exercise.
1800-2400	
Test Units	1st and 2d Platoons, Company A, are airlifted to blocking position east of Area 5 aggressor base camp. Armored Cavalry Platoon moves to attack position. Units conduct joint attack on aggressor base camp in Area 5.
Aggressor Forces	Units in Area 5 defend against attack.
	After a period of resistance aggressor units withdraw.
2400-0600	
Test Units	1st and 2d Platoons, Company A, Armored Cavalry Platoon perform consolidation and reorganization on the objective. Units defend against counterattack. (This defense against a counterattack may be designed as a live fire exercise.)
Aggressor Units	Units in Area 5 conduct counterattack against opposing forces.

D+4

TIME/UNIT	EVENT
0600-1200	
Test Units	Administrative halt to play of tactical problem.
	Debrief player troops.
	Units prepare for return to garrison assembly area.

D+4 (Cont'd)

TIME/UNIT	EVENT
Aggressor Forces	Administrative halt to play of tactical problem. Assemble in Area 7 village. Assist Control in performance of administrative duties required to prepare test area for succeeding test run. Prepare for return to garrison assembly area.

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Same as basic plan

APPENDIX 4 TO ANNEX I TO PART I - STANO II TEST
PROPOSED LIVE FIRE EXERCISES

PROPOSED LIVE FIRE EXERCISES

1. PURPOSE: This appendix provides the Test Director with a proposed method for conduct of live fire exercises.

2. GENERAL: Live fire exercises will be conducted on the fourth night of each test run. These exercises will be designed to furnish data on those essential elements of firepower that dry fire exercises conducted during the test run could not produce. It will be necessary to conduct several separate live fire exercises rather than a full battalion run because safety restrictions and the limitations which test design must impose to isolate and allow measurement of the several types of performance required, will restrict both the size and the action of the elements chosen to fire. During these exercises, the data collection effort will measure both the conduct of fires and the effects of those fires. The essential elements of firepower which need to be measured, can be divided into two areas:

a. Those measurements of firepower which concentrate on conduct more than effect of fires. This type information will be supplied in the company live fire exercise. This exercise will feature the defense of a company perimeter and will concentrate on the command, control, and communications problems inherent in an operation of this scope. Measurement will concentrate on the preparation for, control, coordination, and delivery of fires.

b. Those measurements of firepower which concentrate on effect more than conduct of fires. This type information will be supplied in seven separate small unit level live fire exercises - rifle squad, machine gun section, tank crew, (M48A3 and M551), mortar section, and artillery battery. The exercises will measure the impact the use of STANO equipment has on each element's target acquisition, accuracy, responsiveness, control, and distribution of fires. These exercises are designed to isolate and measure the performance of the small units - the gun crews, sections and squads - which are the essential components of a company's or battery's firepower. They will provide data to fill the information gap between individual performance and company level performance. The significance of this information is based on the premise that unit performance may be greater than the sum of the performances of its component parts. The controls necessary to make these exercises measurable will limit the amount of tactical realism possible.

3. LIMITATIONS: The live fire exercises described in the paragraphs

which follow are listed to indicate to the Test Director the types of exercises desired for the test. It is recognized that it may not be possible to conduct many of the exercises because sufficient range facilities do not exist at the test site or cannot be made available for the test. It is also recognized that there are many limitations on live fire inherent to controlled testing.

4. COMPANY LIVE FIRE: The company live fire exercise will take place the fourth night of each test run as a tactically played company perimeter defensive position under attack. The elements designated for the run will attack, seize and hold an enemy position and prepare a defensive position. Firing elements will make out range cards and prepare night fortifications. At the time designated by test control, an attacking enemy unit will be simulated by silhouette targets and sound and flash simulators. After approximately one half hour of live fire, the company will fall back to an alternate position and set up a second defensive perimeter. The company will be confronted with another simulated attacking enemy. This sequence of events provides data on a night time occupation and preparation of position and night time live fire. During the company exercise, detailed measurements will be made on how the company conducts its fire missions while only gross measurement will be performed to determine the effects of its fires. The quantities and types of weapons in the company allowed to fire in this exercise will be dependent on the impact areas available and on safety restrictions. The amount of ammunition to be expended against each target presented and overall quantities for both firing positions will be controlled. The following is a list of the type of information with which data collection will be concerned: problems of planning and execution, positioning of equipment and personnel, completion of the fire plan, achieving interlocking fires, coverage of dead space, design and execution of final protective fires, control, coordination and communication, directing fires, reaction to threats, shifting fires, distribution of fires, depth of coverage, timing, complementary and supporting capabilities of adjacent units, threat assessment and acquiring and firing on targets detected by devices other than weapon sights.

5. SEPARATE LIVE FIRE: Detailed data on the effects of fires and on the performance of individual units will also be required. To get this data, it will be necessary to hold exercises separate from the company exercise for two reasons. First, safety precautions preclude the free firing of all the kinds of weapons organic to the test units on the same range at the same time. Second, the only way the effects of live fire by the different weapons and units involved can be identified, isolated, and measured, is to break the units

down into manageable elements. Different target arrays must be presented to different kinds of weapons, different types of ranges are required, and different kinds of measurements need to be performed. Therefore, separate live fire exercises will be held for the following elements: rifle squad, machine gun section, tank crew, (M48A3 and M551), mortar section, and artillery battery.

a. Rifle Squad - Live Fire. A rifle squad live fire exercise will be held to determine the impact use of STANO devices has on squad firepower. The evaluation will measure how well the squad covers its sector of fire, the capability of the squad leader and fire team leaders to direct the fires of their subordinates, detection and acquisition of targets, the ability to engage and hit the targets presented and expenditure of ammunition per rifleman. The exercise will consist of three different phases fired on three different ranges.

(1) Phase 1. This phase will be fired on a train fire type range. Each rifleman will be assigned a sector of fire and the squad will be assigned an overall sector. Pop up silhoutte targets will appear at random at intervals along each firing lane from 50 meters to 350 meters.

(2) Phase 2. Phase two will be fired on a range on which popup silhouette targets will be positioned and successively exposed to simulate an enemy unit advancing in an attack on the squad position. Groups of targets will be exposed at successively closer intervals. This phase will provide data on the capability of squad leaders and fire team leaders to direct the fires of their subordinates onto targets of opportunity, the ability of the squad to detect, acquire, engage and hit targets at different ranges and the ability of the squad to cover all of its sector of fire.

(3) Phase 3. This phase will be fired on a night assault course. The squad will advance on line in a closely controlled assault formation on an enemy position simulated by silhouette targets and small flashing lights. This phase will provide information on the ability of the squad to move and shoot in the assault, on the capability of the squad leader to control the movement of his subordinates and to direct their fires, and on the distribution of fires on the objective.

(4) During the different test runs, the squads firing will employ alternate mixes and quantities of STANO equipment. The four STANO items involved will be Starlight Scopes, Miniscopes, Night Vision Goggles and Aiming Lights.

b. Machine Gun Section - Live Fire. A machine gun section live fire exercise will be held to determine the impace use of STANO devices has on section firepower. The evaluation will measure how well the section covers its sector of fire, its responsiveness to briefly exposed targers, its ability to acquire, engage, and hit targets at different ranges, the capability of the section leader to direct the fires of the machine guns onto targets of opportunity, and machine gunner's ability to achieve grazing fire. The M-60 and 50 calibre machine gun crews will be tested separately. For both of them, the exercise will be divided into two phases fired on two different ranges.

(1) Phase 1. Phase 1 will be fired on a night train fire type range.

(2) Phase 2. Phase 2 will be fired on a range on which groups of pop-up silhouette targets will be positioned and successively exposed to simulate na enemy unit advancing in an attack on the section position. Groups of targets will be exposed at successively closer intervals. The exposure of target groupings will also depend on the capability of the section leader to acquire targets and direct the fires of his machine gun crews, and the ability of machine gun crews to acquire, engage and hit targets exposed at various ranges. The machine gun section exercise will involve three M-60 machine gun sections of two crews each from the three rifle platoons, and will involve the M113 mounting 50 calibre machine guns from the Armored Cavalry Platoon. The STANO equipment involved will include Night Vision Goggles, Starlight Scopes, Crew Served Weapons Sights, and illumination from searchlights or flares. Different techniques will be compared during successive runs.

c. Tank Crew - Live Fire. A tank crew live fire exercise will be held to determine the impact the use of STANO equipment has on tank firepower. The evaluation will measure the time required to acquire, engage, adjust fire, and hit E-type silhouette targets by the 50 calibre and coaxial mounted guns and stationary targets for the main gun; and the accuracy of fire by number of 1st and 2nd round hits for the main gun, and total number of hits for the 50 calibre and coaxial guns. The exercise will consist of sending five M48A3 tanks and three M551 tanks to fixed firing positions and firing a sufficient number of rounds from each weapon at minimum, medium and maximum range to obtain the necessary data required to ensure the applicable EEA. The alternative night firing techniques to be examined in the test are firing with white light illumination from searchlights and/or flares, firing with IR searchlight illumination, and firing with the aid of passive devices - i.e., the Crew Served Weapons Sight.

d. Mortar Section - Live Fire. A mortar section live fire exercise will be held to determine the impact use of STANO devices has on section firepower. Data collection will be concerned with adjustment of fire and conduct of fire missions. Both the mortar forward observer teams and the mortar crews will be observed. The evaluation will measure the number of rounds in adjustment required for each type fire mission and the time required from fire request to the command, "fire for effect", for each type fire mission. The rifle company 81mm mortar section will participate. On the afternoon of the fourth day, the section will select, occupy and prepare a firing position at the location along the impact area designated by control. From this position, the section will fire 4 of the 8 missions it is to fire during the exercise. The section will then displace to a second location and prepare to fire a second group of 4 fire missions. The types of missions to be fired by the section during the course of the exercise are outlined in the table below. The two illumination missions listed will be fired as the last two missions of the evening.

MORTAR SECTION FIRE MISSIONS

Type Mission	Target	Round	Fuze
1. Registration		HE	Quick
2. Registration	Prepare (FPF)	HE	Quick
3. Destruction	Bunker	HE	Quick
4. Harassing	Artillery Battery	HE	Quick
5. Interdiction	Bridge	HE	Proximity
6. Barrage/FPF	Personnel in the open	HE	Proximity
7. Neutralization	Personnel in the open	HE	Proximity
8. Neutralization	Personnel in foxholes	HE/WP	Proximity
9. Neutralization	Frame Buildings	HE/WP	Delay
10. Neutralization	Bunkers	HE	Delay
11. Illumination	Area	Illum	
12. Neutralization with Illumination	Personnel in the open	HE/Illum	Quick

The STANO items involved in mortar section operations will be: Metascopes, Night Observation Devices, Medium Range, M-18 Binoculars, and searchlights. Alternative techniques will be evaluated. The exercise, as planned, will provide data on a night time occupation of position and conduct and adjustment of fires. The types of techniques to be evaluated involved the use of infrared or white light illumination (both direct and indirect) and passive image intensifiers as aids to the mortar forward observer when equipped with different types of STANO equipment.

f. Artillery Battery - Live Fire. An artillery battery live fire exercise will be held to determine the impact use of STANO devices has on battery firepower. Data collection will be concerned with the performance of the forward observer (FO) sections in their acquisition of targets and adjustment of fire, and with the performance of the firing battery in its occupation of position, preparation for, and conduct of fire missions. The evaluation will measure the number of rounds in adjustment required for each type fire mission and the time required from fire request to the command "fire for effect", for each type fire mission. On the afternoon of the fourth day, the battery will move into and occupy a firing position on the edge of the impact area. Forward observer sections will move to observation posts at the locations designated. From these positions, the first 4 missions to be conducted in the exercise will be fired. From there, both the forward observer sections and the battery will move to a second position to fire the second section of 4 missions. Missions will be divided between the 4 forward observer sections. The types of missions to be fired are outlined in the table below. The illumination missions listed will be fired as the last missions of the exercise.

ARTILLERY FIRE MISSIONS

Type Mission	Target	Round	Fuze	Method of Fires
1. Registration		HE	Quick	
2. Destruction	Supply Cache	HE	Quick	
3. Neutralization	Personnel under tree cover	HE	Delay	
4. Neutralization	Personnel in shallow foxholes	HE	Delay	
5. Neutralization	Personnel in the open	HE	VT	Auxilliary adjusting point
6. Neutralization	Personnel crossing rice paddy	HE	Time	
7. Illumination	Area Illumination	Illum	Illum	
8. Illumination	Personnel in the open	HE & Illum	Quick	

The STANO items involved in artillery operations will be: Night Observation Device, Medium Range, M-18 Binoculars, Starlight Scopes, and searchlights. The exercise, as planned, will provide data on a night time occupation of position and conduct and adjustment of fires. The types of techniques to be evaluated, involve the use of infrared or white light illumination (both direct and indirect) as an aid to the forward observer when equipped with different STANO items.

ANNEX J TO PART I - STANO II TEST
DATA COLLECTION PLAN

DATA COLLECTION PLAN

1. PURPOSE: This annex describes the development process for the collection plan, with examples.

2. GENERAL:

a. Scope. The purpose of data collection is to provide a complete, accurate and objective record of actions that occur during the troop test. The Data Collection Section is responsible for recording data at critical field sites and providing it to the Analysis Section in usable form.

b. Organization. The Data Collection Section will be composed of a Chief Data Collector, a data collection staff and field data collectors. The staff will assist the Chief Data Collector in maintaining continuous direction of the collection effort. The field data collectors will accompany test troop units during their field operations. An organizational diagram of the Data Collection Section is contained in Appendix 1.

c. Training.

(1) All data collection personnel must understand the concepts being tested and the test methodology. They must also be familiar with the STANO equipment. Training for data collection personnel will consist of formal classroom instruction and practical exercise in the use of data forms and pilot test experience. Training aspects are contained in Annex F.

(2) A pilot test will be conducted two weeks prior to the troop test. The purpose of the pilot test is the check the adequacy of control, data collection and the data reduction/analysis plans to determine if the required data can actually be gathered and processed by the Evaluation Group as organized. All authorized personnel, by grade and MOS, must be assigned and present for duty in the test unit early enough to ensure that all necessary individual and unit training has been accomplished prior to the pilot test. The week just prior to the start of the troop test will be used to make necessary changes in plans or procedures revealed by the pilot test.

3. CONDUCT OF DATA COLLECTION:

a. Duties.

(1) The Chief Data Collector ensures completeness and acceptable quality of field data collection by maintaining constant cognizance of incoming data issuing instructions to data collectors, changing or replacing collectors and insuring distribution and collection of data forms. If it becomes evident that field data is incomplete or unacceptable, he can make changes in the data collection plan, request the analysis chief to revise data form questions and recommend scenario correction or a re-run of particular events. Prior to the test, he supervises the writing of the data collection plan and supervises collector training.

(2) Data Collection Staff. The data collection staff assists the Chief Data Collector in maintaining constant direction of the collection effort. Prior to the test, they will formulate a detailed plan for collection to include assignment of collectors to test troop units and questionnaire pick-up and distribution schedules. They will train the field data collectors. During the test, they will serve as channels of command in information between the Data Collection Section and the field.

(3) Field Data Collectors. The field data collectors will complete data forms accurately and objectively, insuring at all times that no personal feelings are allowed to affect the data.

b. Support of Data Collectors.

(1) During the field portion of the field test, logistical (mess and transportation) support for the data collectors will generally be provided by the troop units to which they have been detailed. It is expected that data collection personnel will remain in the field as long as the troop units to which they have been assigned are engaged in the field problem.

(2) Hourly time checks will be broadcast over the control radio net for synchronization of watches by field controllers and collectors.

(3) Sufficient transportation must be provided to insure distribution and pick-up of field data forms. A daily pick-up and delivery will be scheduled.

(4) Supply peculiar to collection. Reproduction equipment, supplies, and dry storage space will be necessary for handling the data forms. Requirements for supply items such as clipboards, pens, stop watches, etc., will be determined by the Chief Data Collector and he will obtain them through supply channels prior to the pilot test.

4. <u>DATA COLLECTION SCHEDULE</u>: The concept of a data collection schedule is not complex, but execution has proven difficult on past troop tests. Data forms must be constructed which correspond to the type of information concerning the collector, the type unit he is monitoring, the type scenario event scheduled and the appropriate time frame. Which collector is required with which unit must be determined, and the method by which blank data forms are distributed to them and completed forms collected from them must be ascertained. The Chief Data Collector may desire to have extra collector personnel available who can assume the functions of those data collectors who are unable to finish their assignments. If the evaluation section requires additional descriptive data that can be obtained by debriefing selected collectors, controllers or key player troops after the test, the collection schedule must include a provision for this debriefing.

5. <u>DATA FORMS AND QUESTIONNAIRES</u>:

a. General. Specific, objective questions relative to unit performance during test events must be constructed by the Analysis Section prior to the commencement of the test. These questions are based on the EEA and supporting questions derived from the analysis of each objective.

b. Questionnaire Format. The data form is the fundamental recording device in data collection. For this test, data forms are referred to as questionnaires. A questionnaire is the document in which data requirements are stated to the collector, and on which the collector records his observations for use in the analysis process. Answers to the five test objectives will ultimately be obtained from these forms. There are three basic considerations in the design of questionnaires. These are: proper identification of the form, complete instructions for its use, and proper construction of individual questions.

(1) Proper identification of forms is essential so that the evaluation section will know when and if data forms have been completed and returned. Identification is especially useful in the event any member of the Analysis Section wants to check a specific item with the collector who noted it.

(2) Pertinent instruction for the use of the form must be printed on every form. It is essential that it be remembered that what can be misunderstood will be misunderstood. All collectors must be given detailed written instructions regardless of their experience level.

(3) Construction of individual questions must be pursued with

one objective in mind: simplicity. Important considerations are:

(a) The question must be answerable by one man at one location.

(b) The question must not require evaluation by the data collector.

(c) The question must not be ambiguous. Preferably all possible answers to the question should be pre-supplied, leaving the data collector only the responsibility of choosing the correct answer.

(d) The question must be answerable by the collector without computations.

(4) With respect to subparagraph 5b (3) (a) above, questions should be listed on the questionnaire in the order the collector is expected to answer them. It must be anticipated that the collector will be in a position to answer the question. A collector must be assigned to cover every location where it is anticipated that data collection will be required. Everything that is pertinent to the evaluation that each collector can observe must be anticipated, and questions must be constructed forcing the collector to record all pertinent observations.

(5) In reference to subparagraphs 5b (3) (b), 5b (3) (c) and 5b (3) (d) above:

(a) The collector should not have to evaluate unit performance. He is merely recording observations about what actually occurred by answering specific questions on a particular questionnaire.

(b) No question can be subject to varying interpretations; therefore, the information desired must be stated clearly enough for any collector to understand.

(c) The question answering process must not require computations; what appears as simple arithmetic may not be so simple to the collector in the field with the unit during the test.

(6) It is expected that some collectors will need to make remarks in support of the data they have collected. While questions must be as objective as possible, space must be provided on the questionnaire for the individual collector's comments. It is possible that in the construction of the questionnaire that an error was made by failing to require the collector to note some significant data. By providing a remarks section on each questionnaire, the collector will be able to make reference to observations not

specifically called for by data form questions.

(7) The decision as to which questions can be combined into a single data form is governed by where and when a data form can be completed. Three factors must be considered. These are: location, time and subject matter. Is is recommended that special data forms be constructed for this field test, even if the contents nearly duplicate that of a standard form. The data forms must be made as simple as possible. The simplest form in many cases will be blank tables with appropriately headed rows and columns.

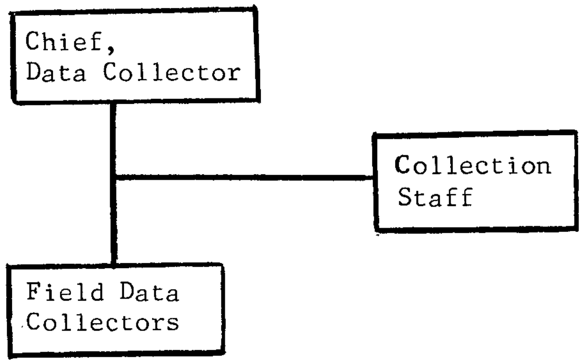
Appendices
1--Data Collection Section Organization
2--Example Data Collection Schedules
3--Example Data Form Questionnaires

DISTRIBUTION: Same as basic plan

DATA COLLECTION SECTION ORGANIZATION

1. PURPOSE: This appendix outlines the organization of the Data Collection Section.

2. ORGANIZATION:



3. FIELD COLLECTORS: Assignment of field collectors is envisioned as follows:

	COLLECTORS
Battalion Headquarters	3
Battalion Communications Platoon	1
Battalion Support Platoon	1
Combat Support Company Headquarters	1
Reconnaissance Platoon	1
Mortar Section	1
Ground Surveillance Section	1
Rifle Company Headquarters	1
Rifle Platoon (3)	3
Weapons Platoon	1
Tank Platoon	1
Armored Cavalry Platoon Headquarters	1
Ground Surveillance Section	1
Armored Cavalry Platoon	2
Sub Total	19

	COLLECTORS
Airlift Platoon	2
Pathfinder Section	1
Field Artillery 105mm Battery	2
Forward Observer Section	4
Battalion Survey Section	1
Battalion Fire Direction Section	1
Sub Total	11
Total	30

NOTE:

The above is a basic breakdown of the field data collectors; however, it is anticipated that certain portions of the test will require a re-alignment to insure that the scheduled activity is adequately covered by data collectors. Re-alignment of the data collectors to conform to activities called for by the scenario is the responsibility of the Chief, Data Collector.

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EXAMPLE DATA COLLECTION SCHEDULES

1. PURPOSE: This appendix contains examples which depict the two major portions of the data collection plan that must be produced by the Test Director.

2. DATA FORM QUESTIONNAIRES: The following is a list of the titles of the example data forms presented in Appendix 3 of this annex. The letter designation to the left of the title is the one used in the collection plan examples which follow.

- A Report of aggressor target and/or activity.
- B Targets presented by aggressor.
- C Assault control.
- D Movement activity.
- E Attack planning.
- F Defense planning.
- G STANO operator equipment data.
- H Air mission data.
- I Maintenance data (TOE).
- J Illness/injury.

3. DISPLAYS AND CHARTS: In its actual final form, the final complete collection plan is a set of charts or displays similar to the examples which follow. Each collector has a copy of those elements of of the plan which refer to his activities. Tabs A and B to this appendix contain the two examples.

Tabs
A--Collection Schedule
B--Data Form Sets

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TAB A TO APPENDIX 2 TO ANNEX J TO PART I - STANO II TEST
COLLECTION SCHEDULE

COLLECTION SCHEDULE

Collector	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
A												
A2	←	1st Plat, A Co		→							←	
A3	←	2d Plat, A Co		→							←	
A4	←	3d Plat, A Co		→							←	
A5												
C												
R	←	Recon Plat		→								
S												
AT												
M												
T												
T1	←	1st Plat, Armd Cav Trp		→								
T2	←	2d Plat, Armd Cav Trp		→								
G												
G1	← Airmbl Co →							← Airmbl Co →			← Airmbl Co →	
G2												
W												
W1							← Aerial Wpns Co →					
W2												
10												
11												
12	←	1st Plat, Agg Co										→
13	←	2d Plat, Agg Co					←	3d Plat, Agg Co				→
14	←	3d Plat, Agg Co		→			←	Wpns Plat, Agg Co				→
15												
20	←	Agg Cav Plat		→			←	Agg Cav Plat				→
21							←	Agg Cav Plat				→

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A-2-J-1

DATA FORM SETS

QUESTIONNAIRE FORM

Collector	A	B	C	D	E	F	G	H	I	J
A				X	X					X
A2	X		X	X	X		X			X
A3	X		X	X	X		X			X
A4	X		X	X	X		X			X
A5	X		X	X	X		X			X
C						X				X
R	X		X			X	X			X
S	X					X	X			X
AT	X					X				X
M	X					X				X
T			X	X	X		X			X
T1	X		X	X	X		X			X
T2	X		X	X	X		X			X
G				X				X		X
G1	X			X				X		X
G2	X			X				X		X
W							X	X		X
W1	X						X	X		X
10		X								
12		X								
13		X								
14		X								
15		X								
20		X								
21		X								

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EXAMPLE DATA FORM QUESTIONNAIRE

1. PURPOSE: This appendix contains several examples which show how data forms are designed. Questions from Annex D were used to design the examples.

2. SAMPLE FORMS: Tabs A through J contain sample forms.

Tabs
A--Attack Planning
B--STANO Operator Equipment Data
C--TOE Maintenance Data
D--Report of Aggressor Target and/or Activity
E--Movement Activity
F--Assault Control
G--Defense Planning
H--Air Mission Data Form Questionnaire
I--Targets Presented by Aggressor
J--Illness/Injury

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ATTACK PLANNING

Commanders Daily Debriefing

NAME______________________ DATE______________________

RANK______________________

UNIT______________________

Office Use Only

(4.1.1.1.1)

Type of operations (Circle one): Raid? Pursuit? Cordon and Search? Coordinated Attack? Perimeter Defense? Base Camp Defense? Other?__________ (4.1.1.1.2)

(4.1.3.1.3)

(4.1.4.1.2)

(4.1.4.2.2)

What environmental factors influenced planning?______________________ (4.1.1.1.3)

How was STANO equipment allocated?__________ (4.1.4.1.3)

(4.1.1.1.4)

(4.1.2.1.5)

How was concept for employment relayed to subordinate elements?______________________ (4.1.1.1.12)

(4.1.2.1.7)

Did use of STANO equipment require prior coordination?______________________ (4.1.3.1.1)

YES__________ NO__________ (4.1.3.2.1)

What items of **STANO** equipment required coordination? (4.1.3.1.2)

(4.1.3.2.2)

Was active illumination planned? YES ____ NO____ (4.1.1.1.5)

(4.1.2.1.6)

Was illumination planned for use on standby basis? (4.1.1.1.6)

YES ____ NO____ (4.1.2.1.6)

Was use of reflective markers planned? YES__ NO__ (4.1.1.1.7)

What markers were to be used?____________________ (4.1.1.1.8)

How were they to be used?____________________ (4.1.1.1.9)

Was use of signal flares planned? YES____ NO____ (4.1.1.1.10)

How were flares to be used?____________________ (4.1.1.1.11)

PLANNING FOR ATTACK

Was prior reconnaissance accomplished? YES___NO__ (4.1.1.2.1)

Ground or air reconnaissance____________________

Time of reconnaissance____________________

Were support weapon positions reconnoitered? (4.1.1.2.2)

YES ____ NO____

Was STANO equipment used in reconnaissance? (4.1.1.2.3)

YES ____ NO ___

Did security element have STANO equipment? (4.1.1.3.10)

YES ____ NO ___

	Office Use Only
MOVEMENT CONTROL	
Method of movement ______________________	(4.1.1.1.13)
Was movement control by terrain features? YES__ NO__	(4.1.1.1.14)
Was movement control by azimuth? YES_____ NO_____	(4.1.1.1.15)
MOVEMENT TIME SCHEDULE	
Time unit ordered forward ______________________	(4.1.1.3.1)
Time scheduled at release point ______________	
Time scheduled at coordination line ____________	
Time scheduled at line of deployment ___________	
Time scheduled at objective ____________________	(4.2.1.4.3)
Was choice of phase lines simplified by use of	
STANO equipment? YES__________ NO__________	
Release points? YES__________ NO__________	(4.1.1.1.17)
Coordination line:	(4.1.1.1.19)
Line of deployment:	(4.1.1.1.18)
Limit of advance:	(4.1.1.1.20)
Objective:	(4.1.1.1.16)

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STANO OPERATOR EQUIPMENT DATA

Collector ID________________(Friendly) DATE__________________

Collector for________________unit(s)

Location (Coordinates)__________________________

	Office Use Only
Questionnaire Number____________________________	
OPERATOR PERSONNEL	
Date/Time of any failure DATE____TIME_____	(5.1.2.1)
Date/Time turned in for repair DATE____TIME_____	(5.1.2.2)
Failed item name______________ S/N ______________	(5.1.1.2)
Failure cause____________________________________	
____	(5.1.1.3)
Hours of actual operation FROM __________TO____	(5.1.1.5)
Time required for preventative maintenance_______	(5.2.2.2)
Time required for operator maintenance___________	(5.2.2.1)
Did operator change batteries? YES______NO______	(5.4.1.2.2)
Total time to change batteries___________________	

REMARKS: ____

DISTRIBUTION: Same as basic plan

TOE MAINTENANCE DATA

(Form to stay with each item)

Collector ID____________________(Friendly) DATE_______________

Collector for____________________unit(s) Office Use Only

Location (Coordinates)__________________________ (1.1.1.2.2)

Questionnaire Number____________________________

MAINTENANCE PERSONNEL

Failed item name________________ S/N____________ (5.1.1.2)

When failure occurred DATE_________ TIME_______ (5.1.2.1)

When picked up DATE_________ TIME_______ (5.1.2.2)

Unit accepting item for repair___________________

When received for repair DATE________ TIME______ (5.1.2.2)

Time repair parts received______________________ (5.1.2.3)

When repair started DATE________ TIME______ (5.1.2.4)

Time repair completed DATE________ TIME______ (5.1.2.5)

Time item was returned to unit

DATE________ TIME______ (5.1.2.6)

REMARKS:____

DISTRIBUTION: Same as basic plan

REPORT OF AGGRESSOR TARGET AND/OR ACTIVITY

Collector ID ____________________ (Friendly) DATE ______________

Collector for ____________________ unit(s)

	Office Use Only
Location (Coordinates) ____________________	(1.1.1.2.7)
Questionnaire number ____________________	
Time reported ____________________	(1.1.1.2.5)
Type Activity/Target ____________________	(1.1.1.1.2.1)
Direction of movement ____________________	(1.2.2.1.1.10)
Speed of movement ____________________	(1.2.2.1.15)
Type of light used - White ____________________	
IR ____________________	
Other ____________________	(1.2.2.4.1.4)
Number of personnel ____________________	(1.1.1.1.2.3)
How armed ____________________	(1.2.2.1.1.7)
Type of vehicle ____________________	(1.2.2.3.1)
Reported range ____________________	(1.1.1.4.1)
Reported azimuth ____________________	(1.2.1.2.1)
Reported coordinates ____________________	(1.1.1.2.6)
Was target/activity camouflaged? YES ____ NO ______	(1.2.2.3.1.14)
Time activity ceased ____________________	(1.1.1.2.9)
Time target disappeared ____________________	

	Office Use Only
Detecting device________________________________	(1.1.2.4.2)
Device location (Coordinates)____________________	(1.1.1.4.2)
Activity of Friendly unit when Aggressor Activity/ Target Spotted____________________________________	

DISTRIBUTION: Same as basic plan

MOVEMENT ACTIVITY

Collector ID________________(Friendly) DATE______________

Collector for________________unit(s)

	Office Use Only
Location coordinates________________	
Questionnaire number________________	
Name of unit________________	(3.1.1.1.1)
Movement type________________	(3.1.1.1.2)
Formation type________________	(3.1.1.1.4)
Location start (Coordinates)________________	(3.1.1.2.1)
Surface conditions________________	(3.1.1.1.9)
NUMBER OF:	
Men on foot________________	(3.1.1.1.5)
Tracked vehicles________________	(3.1.1.1.6)
Wheeled vehicles________________	(3.1.1.1.7)
TIME:	
Commanders estimate to complete move________________	(3.1.1.3.6)
Scheduled start________________	(3.1.1.2.4)
Scheduled finish________________	(3.1.1.3.4)
First element started________________	(3.1.1.2.4.2)
Last element started________________	(3.1.1.2.4.3)

	Office Use Only
DELAY:	
Time started ________________	(3.1.1.2.7)
Time delay ended ________________	(3.1.1.2.9)
Cause of delay ________________	(3.1.1.2.8)
Number of mines discovered TALLY ________	(3.1.1.7.2)
Number of man made obstacles TALLY ________	
Did all elements complete movement? YES____ NO____	(3.1.1.3.1)
INTERVALS (METERS BETWEEN):	
Individuals ________________	(3.1.1.4)
Wheeled vehicles ________________	(3.1.2.7.1)
Tracked vehicles ________________	(3.1.3.7.1)
Individuals and vehicles ________________	(3.1.1.11.2)
DISTANCE SECURITY ELEMENTS ARE:	
In advance of formation ____________ METERS	(3.1.1.13.1)
To the left of formation ____________ METERS	(3.1.1.13.2)
To the right of formation ____________ METERS	(3.1.1.13.2)
To the rear of formation ____________ METERS	(3.1.1.13.3)
Formation DEPTH without security ________ METERS	(3.1.1.14.1)
Formation WIDTH without security ________ METERS	(3.1.1.14.3)
Location end ________________	(3.1.1.2.2)
First element finish ________________	(3.1.1.3.4.1)
Last element finish ________________	(3.1.1.3.4.2)

DISTRIBUTION: Same as basic plan

ASSAULT CONTROL

Collector ID ____________________ (Friendly) DATE ______________

Office Use Only

Collector for ____________________ unit(s)

Location (Coordinates) ____________________

Questionnaire number ____________________

Time Unit crossed line of departure ____________ (4.2.1.4.1)

RELEASE POINT:

Correctly identified? YES _____ NO _____ (4.1.1.5.1)

Time reached ____________________ (4.1.1.3.5)

COORDINATION LINE:

Correctly identified? YES _____ NO _____ (4.1.1.5.3)

Time reached ____________________ (4.1.1.3.7)

LINE OF DEPLOYMENT:

Correctly identified? YES _____ NO _____ (4.1.1.5.2)

Time reached ____________________ (4.1.1.3.8)

Width of squad formation ____________________ (4.2.1.1.1.1)

Depth of squad formation ____________________ (4.2.1.1.1.1)

Did unit halt in attack position? YES ____ NO _____ (4.1.1.3.3)

Why ____________________ (4.1.1.3.4)

Did unit reorganize? YES _____ NO _____ (3.1.1.3.4.1)

Where ____________________ (3.1.1.3.4.2)

Did unit fail to arrive on objective?YES ___ NO ____ (4.1.1.4.3)

Why ____________________ (4.1.1.4.4)

		Office Use Only
Was unit disoriented?	YES____ NO______	(4.1.1.4.4)
Why?____		(4.1.1.4.5)
Was STANO equipment used to find lost units?		
	YES____ NO______	(4.1.1.4.7)
Time unit reached objective______________________		(4.2.1.4.2)
Did unit identify limit of advance?	YES____ NO ____	(4.1.1.5.4)

DISTRIBUTION: Same as basic plan

DEFENSE PLANNING

Commanders Daily Debriefing

NAME________________________ DATE__________________

RANK________________________ Office Use Only

UNIT________________________

Time preparation for defense began____________	(4.1.2.1.2)
Time preparation for defense ended____________	(4.1.2.1.4)
Were weapon positions reconnoitered and marked prior to conduct of defense? YES______ NO______	(4.1.2.2)
Was displacement of weapons facilitated by use of STANO equipment? YES______ NO______	(4.1.2.3.2)
Was shifting of forces facilitated by use of STANO equipment? YES______ NO______	(4.1.2.3.1)
Was commitment of counter attack force facilitated by use of STANO equipment? YES______ NO______	(4.1.2.3.3)
Was unit able to defend on a wider frontage due to use of STANO equipment? YES______ NO______	(4.1.2.3)
What was distance from left to right flank?______	(4.1.2.3.2.1)
How far out were outposts?________________	(4.1.2.3.2.2)

DISTRIBUTION: Same as basic plan

AIR MISSION DATA FORM QUESTIONNAIRE

Collector ID ________________(Friendly) DATE ______________

Collector for________________unit(s)

Location (Coordinates)________________

Questionnaire number__________________

	Office Use Only
SEARCHLIGHT NAVIGATION:	
Time mission began___________________________	(3.2.1.2.1)
Ground navigation aids required?YES_____ NO_____	(3.2.1.1.2)
Air traffic control required? YES_____ NO_____	(3.2.1.1.3)
Mimimum effective altitude for searchlight_____	(3.2.1.3.1)
Maximum effective altitude for searchlight_____	(3.2.1.3.2)
Obstacles detected? YES_____ NO_____	(3.2.1.4)
What obstacles?(List) 1 ______________________	(3.2.1.4.1)
2 ______________________	
3 ______________________	
Range obstacles identified____________________	(3.2.1.4.2)
Altitude obstacles identified_________________	(3.2.1.4.3)
Aircraft speed when identified________________	(3.2.1.4.4)
LANDING ZONE/PICKUP ZONE LOCATION:	
Located with searchlight YES_____ NO_____	(3.2.2.1)
Time search began_____________________________	(3.2.2.2.1)
Time located__________________________________	(3.2.2.2.2)
Time landed___________________________________	(3.2.2.2.3)

	Office Use Only
Suitability determined with searchlight? YES__ NO__	(3.2.2.3)
Landing zone/pickup zone obstacles identified with searchlights? YES__ NO__	(3.2.2.3.2)
Height of obstacles determined? YES__ NO__	(3.2.2.3.3)
Size of landing zone/pickup zone________________	(3.2.2.3.4)
Slope of landing zone/pickup zone determined YES__ NO__	(3.2.2.3.5)
Surface conditions______________________________	(3.2.2.3.6)
Enemy position predetermined with searchlight? YES__ NO__	(3.2.2.3.7.1)
Show landing zone/pickup zone approach route YES__ NO__	(3.2.2.3.8)
Show landing zone/pickup zone departure route YES__ NO__	(3.2.2.3.8)
Altitude of above determination________________	(3.2.2.3.10)
Did searchlight on board cause interference? YES__NO__	(3.2.2.3.11)

DISTRIBUTION: Same as basic plan

TARGETS PRESENTED BY AGGRESSOR

Collector ID________________(Aggressor) DATE______________

	Office Use Only
Collector for________________unit(s)	
Location (Coordinates)____________________	(1.1.1.2.2)
Questionnaire number____________________	
Activity engaged in____________________	(1.1.1.1.1.1)
Number of personnel presented________________	(1.1.1.1.1.3)
Vehicles presented (List) 1________________	
2________________	
3________________	
4________________	(1.1.1.1.1.4)
Were engines on or warm? YES_____ NO_____	(1.2.2.4.1.6)
Other targets presented 1________________	
2________________	
3________________	
4________________	(1.2.2.2.1)
Type of light used - White ________________	
IR ________________	
Other ________________	(1.2.2.4.1.4)
Time arrived at location____________________	(1.1.1.2.1)
Location (Coordinates)____________________	(1.1.1.2.2)

	Office Use Only
Time left location ____________________	(1.1.1.2.4)
Did you see friendly visual signals? TALLY______	(4.2.4.2.1)
How many did you understand? TALLY ____________	(4.2.4.2.2)

DISTRIBUTION: Same as basic plan

ILLNESS/INJURY

Data Collection Form

Collector ID________________(Friendly)   DATE_______________

Collector for________________unit(s)

Location (Coordinates)_____________

Reporting: Illness_____ Injury_____

Personnel: Operator____ Operator doing maintenance task_____

Maintenance Technician _____   Other_____

Unit of injured/ill man____________________________________

	Office Use Only
What time did the illness/injury take place?______	(1.4.4.1.2)
____	(1.4.4.2.2)
____	(1.4.5.1.4)
What was the nature of the illness/injury?_______	(1.4.4.1.1)
____	(1.4.4.2.1)
____	(1.4.5.1.2)
What equipment(s) was the individual using when the illness/injury occurred?____________________	(1.4.4.1)
____	(1.4.5.1)

Office Use Only

What were the conditions/circumstances under which the illness/injury took place?____________________ (1.4.4.1.3)

____

____ (1.4.4.2.3)

____

How was the individual performance affected by the illness/injury?____________________________________ (1.4.5.1.6)

____

How was the illness condition alleviated?________ (1.4.5.1.7)

____

What was the disposition of the individual after the illness/injury occurred?______________________ (1.4.5.1.5)

____

Did the individual continue to use the equipment when ill or injured? YES_____ NO_____ (1.4.5.1.5)

If yes to Item 10, did the illness persist during the assigned duty hours on the equipment?

YES_____ NO_____

If no to Item 11, how were the effects of the illness alleviated?________________________________ (1.4.5.1.7)

____

DISTRIBUTION: Same as basic plan

ANALYSIS PLAN

1. PURPOSE: This annex describes the analysis process to be used in the STANO II preliminary test.

2. GENERAL:

a. Scope. The analysis plan sets forth the procedures and organization for reducing test data into a usable body of information and detailed procedures for analyzing the information thus assembled. (See appendices one through six). For purposes of this plan the following definitions apply:

(1) Data Reduction refers to sorting out data according to the purpose for which it was gathered.

(2) Analysis is the determination of findings and conclusions and making recommendations pertinent to the tested concept.

b. Organization. The Analysis Section of the Evaluation Group will be composed of an Analysis Chief, an analysis team for each of the five test objectives, and an administrative section.

3. <u>CONDUCT OF THE EVALUATION</u>:

a. Duties of the Analysis Section

1) Analysis Section Chief

a) Ensures complete and clear evaluation of test results.

b) Supervises design of the analysis plan.

c) Informs the Chief Controller of any modifications needed in the scenario to complete or correct missing or invalid data from the field.

d) Coordinates with the Chief Data Collector regarding changes in data collection procedure.

e) Supervises the Analysis Section.

f) Supervises preparation of the Report of Test.

2) Analysis Teams

a) Design the detailed analysis plan.

<u>1</u>. Design procedures for data reduction and analysis.

<u>2</u>. Design data presentation scheme to include spread sheets and necessary calculations. (See spread sheet example, Appendix 7).

<u>3</u>. Design data form questionnaires.

b) Process raw data from the field.

<u>1</u>. Check completed data forms for completeness and accuracy.

<u>2</u>. Judge the validity of the data collected in the field.

<u>a</u>. Compare data results on an event with data from repetitions of the event or a similar event to judge credibility in terms of numerical measures, normalcy of military operations and explanatory comments of field data collectors.

<u>b</u>. Consider the number of answers to the same question in order to judge credibility in terms of enough answers to establish a stable average.

c. Take into account contaminants that may confuse results, both those that are anticipated and those that arise unexpectedly during field play.

d. Judge apparent motivation of the data collectors in terms of careless or inappropriate answers.

c) Compute test findings in accordance with the analysis plan.

1. Tabulate raw field data in workbooks or on spread sheets.

2. Perform arithmetic combinations from one level to the next higher level in strict adherence to the predetermined test procedure.

3. Compare answers for every item with its control value to yield findings at each level.

4. Summarize descriptive data by categories.

5. Periodically furnish the Analysis Chief with current findings for possible use in decisions regarding the conduct of the test.

d) Inform the Analysis Chief of any gaps in the data necessary to make proper findings, with recommendations for changes in the scenario or modifications in collection procedures.

e) Draw conclusions based on consideration of all available factors.

1. Consider test findings.

2. Consider planned descriptive data.

3. Consider debriefing, questionnaire or observer contributions.

4. Correlate appropriate information from logs, operations maps, data collector's remarks, weather reports and any other pertinent sources.

5. Consider personnel experience level.

f) Make test report recommendations as appropriate especially in the case of problems recognized and successfully corrected by the player troops, but also as supported by additional data, reasoning or related information.

(g) Prepare the final evaluation of each test objective, stating findings, conclusions, supporting data and appropriate recommendations in the form required by the format of the Report of Test.

3) Editorial Officer

a) Prepare a preliminary Report of Test "Strawman" prior to commencement of the test.

b) Inform analysis section personnel of the content and format of their portions of the Report of Test.

c) Revise the portions of the report that change during the conduct of the test by observation of the field work and coordination with other elements of the analysis group.

d) Supervise the preparation of the Report of Test.

b. Construction of Questions

1) General. Prior to the conduct of the test, each objective analysis team must know exactly what data will be generated with respect to all aspects of their objective so that they can develop a logical basis for determining test findings. The following tasks are the steps which should be kept in mind in organizing analysis objective teams to design questions and questionnaires. The objective teams:

a) Analyze the outline scenario and determine what data will be generated pertinent to their objective.

b) Analyze their subobjective and essential elements of analysis to determine what data must be collected, and construct questionnaires to collect the data required.

c) Ensure that the detailed scenario is constructed to force actions sufficient to generate the required data.

d) Receive this raw data when it is collected, post it to spread sheets according to the EEA towards which it contributes.

e) Determine findings based on predetermined procedures.

2) Types of Questions. Subordinate to the EEA there are normally two types of questions--checklist questions and data form questions.

a) Checklist Questions are those questions required to answer the EEA, but unsuitable for direct use by the data collector without additional breakdown into data form questions.

1. As an example, consider a checklist question such as "How many potential targets were acquired by STANO equipment?" This question can only be answered by a summation of all targets acquired for all days of the test. For field use the question would have to be limited to one observer or operator station during one collection period. Furthermore, the determination of whether the acquisition by the operator was in fact an actual target will involve comparing this information with data recorded by the control section on the disposition and location of the aggressor forces. Once the determination of validity of target acquisitions has been made, and the information from all operators turned in, the analyst then does the necessary arithmetic to determine the answer to the checklist question.

2. There are two general types of analysis questions for most EEA.

a. Evaluative--those to which actual quantitative values will be attached and computed in arriving at an objective conclusion.

b. Descriptive--those designed to explain the reason behind the results of the evaluation. For example, if a task was being performed at about 70 percent effectiveness, as determined by the evaluative questions the descriptive questions would supply answers to tell what actually happened in the field and why the effectiveness was at 70 percent rather than at 90 or 50 percent.

c. In the computation of findings only evaluative data is assessed. Later in writing the Report of Test, the descriptive data will be used to explain the test results.

b) Field data questions are those which can be used by collectors in the field. These questions are written clearly, simply, and objectively. In all cases the preferred answer is a numerical quantity, a yes or no or a check mark against a set of most likely responses.

c) Certain qualifications are considered in the selection of evaluative questions. These are:

1. Each question, regardless of its level, must be relevant and essential to the assessment called for in the next higher generalization level.

2. Each question must be answerable by some measurement technique, either quantitatively or qualitatively.

3. The criteria by which questions are to be evaluated must be established prior to the conduct of the test.

d) The number of questions under each EEA cannot be determined by a quota. The numbers and types of questions used depend on military judgment as to what data are necessary and sufficient to answer the EEA.

4. EVALUATION LOGIC DIAGRAMS:

a. In order for data analysis to be accomplished in an orderly, efficient and thorough manner, interrelationships within the programmed structure of the test must be defined. This is best accomplished by use of logic diagrams which depict both the relation between similar elements and the relation of these to the next higher level. An example of this would be a logic diagram showing all of the EEA for a particular subobjective, the relationship among them and the manner by which their combination is applied to answer the subobjective. There are two general schemes by which the combination may be made--compensatory and non-compensatory (sometimes called successive hurdles): The compensatory scheme allows a low score in one area to be compensated for by a high score in another and may be thought of as a form of averaging. This requires the assignment of relative weights to all items on a common level in the pyramid which are involved, e.g., all the EEA which answer one subobjective. Weighing may be very simple where all items are of equal weight or quite complex if many of the items interact. The non-compensatory scheme applies where all items on a common level must meet their individual standards in order that the next higher level of generalization can be judged successful. The weights have been assigned by USACDC and are contained in Appendix D logic diagrams.

b. Only evaluative items are included in logic diagrams since descriptive items provide only background information. This background information is useful and essential to a complete understanding of the situation but does not, by itself, provide evaluative data. Descriptive items normally appear only at the lowest level in the pyramid.

c. While analyzing the test data, the logic diagrams help preserve the rationale used in developing the test plan to ensure that data analysis takes all the data gathered and properly assimilates it. It is easy to think that the rationale hammered

out in planning will not be forgotten but the span of several months between the plan and the analysis of test results, plus the daily pressure of immediate test problems, will erase the rational unless it is preserved clearly. The logic diagram, the weights and the written rationale after each objective, subobjective and EEA serves this end.

5. EVALUATION OF TEST RESULTS: The evaluation logic diagram presents a graphic display of the system planned for the flow of data from a field questionnaire to analysis question to EEA and upward. A system of values to judge the results of the test must also be established. This system involves the establishment of criteria and weights for the questions subordinate to each EEA. These criteria and weighing decisions have been made prior to the actual conduct of the test.so that test results will not be allowed to bias the weighing process. The weights for this test assumes that all data requirements are equally important in support of the EEA. Weights are set for the EEA upward in the Appendix D logic diagrams. The criteria which must be met or exceeded is the score of the unit during the control test.

a. Criteria. Test criteria define standards of performance developed primarily through military experience, knowledge and judgment. In this test the control runs, or those exercises conducted using a standard TOE, will constitute the base line standards against which the augumented units will be compared. The test criteria represent that performance which can be described by some objective such as "effective," "sound" or "workable." For example, if soundness is the determination desired, the criteria establish the minimum level felt to be acceptable and the findings reached would be that the test subject is "sound" or satisfactory, i.e. it did meet the criteria. Criteria are commonly expressed as numerical values or percentages.

b. Weighting. When answers to items are combined some are usually more important than others. For a complex military situation, it would not be a clear statement of results to combine all data values equally. The combination values that take these differences into account are called weights. Weights are set before the field portion of the test, and expressed in the evaluation logic. There are three possible weighting variations: full weight, partial weight and no weight.

1) Full weight - the particular answer is essential to the next higher evaluation level and failure to satisfy the criterion on this level assures failure at the next level.

2) Partial weight - the particular answer is important in the next higher evaluation level, but failure does not necessarily assure failure at the next higher level, as it does not constitute the whole subject.

3) No weight - the particular answer has no effect on the next higher level of evaluation.

c. CORG Methodology Guide. Each officer assigned to the Analysis Section should become familiar with the portions of the CORG Troop Test Methodology Guide dealing with data analysis. Portions of the guide dealing with criteria and weighting are found on pages 31-41.

6. DATA VALIDITY: A step in the analysis which must be performed continuously by personnel of the objective teams is determining the validity of the data which they receive. This validity determination must be accomplished by military judgment, which is governed by four principles:

a. The more times an event occurs and is measured, the greater the validity of the combined data collected.

b. The more contaminants which influence the scenario events the less valid the data collected becomes.

c. If one questionnaire varies considerably from a number of others, this variance may place doubt on its credibility unless there is some explicable reason for the variance.

d. If an inaccuracy in the collection effort by collector personnel is indicated by the data turned in, the data's validity is subject to suspicion.

e. The Chief Data Collector can make a cursory check of the questionnaires as they are turned in to him. This will reveal obvious illegible or incomplete forms and the Chief Data Collector can rectify these errors within his capabilities. However, the detailed determination of data accuracy and completeness is accomplished within the objective teams of the Analysis Section. As they have already determined what raw data should be obtained from the collection section for any given scenario event, a detailed check of the questionnaires upon their return is possible and necessary. If the data is not forthcoming for any given scenario event, Analysis Section personnel must investigate the matter and determine the cause for the failure of this part of the collection effort. If necessary to get required data, a scenario event may be re-run at the direction of the Test Director.

7. DETERMINATION OF FINDINGS: This step should be virtually mechanical, as performance standards will be established by the control runs, and weights previously established. It involves going through the spread sheets where data has been posted, determining percentages of success or failure for each question to determine an EEA's success or failure; using EEA which succeeded to determine if a subobjective succeeded; and finally using the subobjectives which succeeded to determine the test objectives which pass or fail. This mechanical application of predetermined criteria produces test findings.

8. CONCLUSIONS AND RECOMMENDATIONS: The Analysis Section must then develop conclusions based on the test findings. Conclusions are military opinions based on all of the available evidence as to the "answers" to the questions which constitute the test objectives. Evidence for conclusions comes from data gathered in support of descriptive items, debriefing of participating personnel, military experience of the evaluation group and, of course, the findings discussed above. The last step in analysis is to formulate recommendations pertaining to the tested concepts based upon the conclusions which have been determined.

9. REPORT OF TEST:

a. Content. The guiding scientific principle for troop test reporting is that everything must be reported and made explicit. Therefore, the report will contain a complete description of the test environment, a revised scenario which will record exactly what took place during the test, test findings and test conclusions and recommendations.

b. Preliminary Report of Test. A preliminary report of test, or "strawman," will be submitted to the Test Director before the test begins. Much of the content for the final report can actually be supplied at this time. It would include a troop list, a description of the maneuver areas, a statement of the test troops' state of training, a statement of the doctrine, the concept being tested, test administrative stipulations, statement of assumptions and a statement of bias causing factors. Items not available in complete form should still be included in outline form or as preliminary model of what is anticipated. Control, data collector and analysis procedures will be available in their planning form, although the details may change during the conduct of the maneuver. This technique gives the Test Director an opportunity to review the entire plan of test and, in some cases, may draw attention to data requirements not otherwise anticipated.

c. Assignment of Work Tasks. Prior to field testing, responsibility for contribution of certain portions of the report will be assigned. This will allow the personnel concerned to concentrate their observations on the subjects that will pertain to their assignment. For example, the Editorial Officer will require the test findings and analysis procedure from the Analysis Section, the historical log from the Control Section and commander's comments from the Troop Test Commanders. He will need a statement of the concepts being tested and of the methodology.

d. Report Compilation. The test report will be compiled from the portions previously assigned for completion by the Editorial Officer. The materiel submitted in the preliminary Report of Test can be revised and finalized. A corrected scenario can be accompanied with whatever descriptive data is deemed necessary. The reports from the five objective teams, prepared on a separate basis, will be integrated in the final form of the report. Format and requirements for the report are outlined in USACDC Regulation 71-8.

Appendices
1-- Detailed Analysis - Objective 1
2-- Detailed Analysis - Objective 2
3-- Detailed Analysis - Objective 3
4-- Detailed Analysis - Objective 4
5-- Detailed Analysis - Objective 5
6-- Data Analysis Forms
7-- Example Spread Sheet

DISTRIBUTION: Same as basic plan.

DETAILED ANALYSIS - OBJECTIVE 1

The answers to the data requirements appearing in Objective 1 should be obtained in the following manner:

EEA 1.1.1

1.1.1.1 The answer to this data requirement is obtained by dividing the number of activities detected by friendly forces (answer to 1.1.1.1.2) by the number of aggressor activities available to be detected (1.1.1.1.1).

1.1.1.2 The answer to this data requirement is obtained as the sum of both inaccurate locations of enemy activity and false detections of enemy activity. The reported map coordinates of each aggressor activity (answer to 1.1.1.2.7) are to be compared to the actual map coordinates for such aggressor activity (answer to 1.1.1.2.2). If these map coordinates are within 25 meters of each other, the detection is considered accurate and the target is not counted in this data requirement. If there is no enemy activity at that location, if there is no enemy activity at that reported time, or if the range and line-of-sight limitations of the item of equipment would prevent detection, then the detection is considered false (answer to 1.1.1.2.11.2). The total number of false detections is added to the total number of inaccurate locations and this sum is divided by the total number of reported enemy detections. This final percentage is the answer to the data requirement.

1.1.1.3 The time each enemy activity began (answer to 1.1.1.2.1) is subtracted from the reported time that this activity was detected (answer to 1.1.1.2.5). If the detection is reported after the time that the enemy activity terminated (answer to 1.1.1.2.4), then that activity is considered not to have been detected. The times between activity start and activity detection are added, and this sum is divided by the number of time intervals involved. This final time is the average length of exposure before detection.

NOTE: It must be remembered that each hour has 60 minutes, and that time intervals in excess of one hour must be converted to minutes before they can be added and averaged.)

1.1.1.4 The average detection range for an item of STANO equipment is obtained as the sum of all detection ranges for that

item of equipment divided by the number of detections. For airborne STANO equipment, the range of detection is obtained from the equipment itself (answer to 1.1.1.4.4). For ground STANO equipment, the actual map coordinates of the enemy activity (answer to 1.1.1.4.1) and the coordinates of the friendly equipment (answer to 1.1.1.4.2) a are used to determine range. For each item of equipment, the ranges of detection are added, and the total is divided by the number of ranges that were added.

1.1.1.5 The percentage of detected activities that were found through the use of STANO equipment is the total number of detections obtained through the use of STANO equipment (answer to 1.1.1.5.2) divided by the total number of detections that were obtained (answer to 1.1.1.5.1).

EE 1.1.2

1.1.2.1 The answer to this data requirement is obtained by dividing the number of activities detected by friendly forces by the number of aggressor activities available to be detected. In the offensive situation, all targets that have been detected prior to the start of the offense shall be considered to be detected during the offense. These detections are obtained from a map analysis of the combat situation immediately prior to the offense. To these detections are added those that appear during the offense (answer to 1.1.2.1.2). The total number of activities available for detection are obtained in a similar manner. A map analysis provides the number of targets available to be detected prior to the offense and the answer to 1.1.2.1.1 provides the number of targets available for detection during the offense. The total number of activities detected is divided by the total number of activities available; the result of this division is the answer to the data requirement.

1.1.2.2 Obtain the answer by comparing 1.1.2.2.1 and 1.1.2.2.3 with 1.1.2.2.4 and tallying the number of times there was no action and separately, the number of times there was. Then tally the times the reported map coordinates (1.1.2.2.5) were more than 50 meters from the coordinates of the activity (1.1.2.2.2). For those where the time of activity was correct and add the two error tallys. Divide this product by the number of detections.

1.1.2.3 The answer to this data requirement is obtained in the same manner as that for data requirement 1.1.1.3. Activities that were detected prior to the offense are not considered in this data requirement; those that existed prior to the offense, but were not detected until the offense started are considered. The time each activity began (answer to 1.1.2.3.1) is subtracted from the reported time that this activity was detected (answer to 1.1.2.2.8). If the detection is reported after the time that the enemy activity terminated (answer to 1.1.2.3.2), then that activity is considered not to have been detected.

1.1.2.4 The percentage of detected activities that were obtained through the use of STANO equipment is the total number of detections obtained through the use of STANO equipment (answer to 1.1.2.4.2) divided by the total number of detections that were obtained (answer to 1.1.2.1.1).

1.1.2.5 The answer to 1.1.2.5.2 divided by 1.1.2.5.1 answers the data requirement.

1.1.2.6 The answer to this data requirement is obtained as the sum of two numbers. The first of these is obtained by adding the answers to questions 1.1.2.6.1.1, 1.1.2.6.1.2, 1.1.2.6.1.3, and 1.1.2.6.1.4. The second number is the average time difference between friendly detection of an enemy and enemy detection that it is under attack. The time of enemy detection (answer to 1.1.2.6.2) is subtracted from the time of friendly detection (answer to 1.1.2.2.4). The arithmetic sign (negative or positive) of this subtraction is retained, and the time intervals are summed. The arithmetic sign of this summation is also retained. The summation of these time intervals is divided by the number of time intervals, and the arithmetic sign is applied to the result of the division. The average time interval is subtracted (with proper regard to the arithmetic sign) from the answer to question 1.1.2.6.1; the result is the answer to data requirement 1.1.2.5.

1.1.2.7 In this data requirement, the number of times a friendly unit detected an enemy force and bypassed it without detection (answer to 1.1.2.7.2) is added to the number of times a friendly force detected an enemy unit and infiltrated it without detection (answer to 1.1.2.7.3). This total is then subtracted from the number of times a friendly force bypassed an enemy force without detecting it (answer to 1.1.2.7.1). The algebraic sign of the final result is retained in answering the data requirement.

1.1.2.8 No computation is involved in answering this data requirement; essay answers are desired.

EEA 1.1.3

1.1.3.1 The answer to this data requirement is ;obtained in the same manner as that for data requirement 1.1.1.1. The total number of activities detected by the reconnaissance element (answer to 1.1.3.1.2) is divided by the number of aggressor activities available to be detected (answer to 1.1.3.1.1).

1.1.3.2 The answer to this data requirement is obtained by dividing the answer to question 1.1.3.2.2 by the answer to question 1.1.3.2.1. Incorrect activity detections are defined in the same manner as those in data requirement 1.1.1.2 and 1.1.2.2.

1.1.3.3 The answer to this data requirement is obtained in the same manner as that for 1.1.2.6. The number of times that a friendly unit detected an enemy force and bypassed it without detection (answer to 1.1.3.3.2) is added to the number of times that a friendly force detected an enemy and infiltrated it without detection (answer to 1.1.3.3.3). This total is then subtracted from the number of times a friendly force bypassed an enemy force without detecting it (answer to 1.1.3.3.1). The algebraic sign of the final result is retained in answering the data requirement.

1.1.3.4 The question needs to be asked on the data forms "How many times was the unit detected by enemy force?" This question alone, compared from zero runs against STANO equipped runs provides the answer to 1.1.3.4.

EEA 1.1.4

1.1.4.1 The answer to this data requirement is determined by counting the number of "no" answers to question 1.1.4.1.2.

1.1.4.2 In determining the answer to this data requirement, count the number of times that the individual items of STANO equipment complicated the man's normal intelligence gathering ability (answer to 1.1.4.2.3) and add this to the number of times the operation time factor hindered the normal duty function for the operator (answer to 1.1.4.2.5).

1.1.4.3 In answering this data requirement, count the number of time operators.and assistants were not able to carry their assigned items of equipment (answer to 1.1.4.3.3) and add this to the product of question 1.1.4.3.4. The answer to question 1.1.4.3.4 is determined by counting the number of "yes" answers.

1.1.4.4 The answer to this data requirement is obtained by counting the number of "yes" answers to questions 1.1.4.4.1, 1.1.4.4.2, and 1.1.4.4.3.

SUBOBJECTIVE 1.2

EEA 1.2.1

1.2.1.1 The answer to this data requirement is determined by counting the number of yes answers to question 1.2.1.1.6 and adding this to the total number of yes answers to question 1.2.1.1.7. Any difference between estimated and actual range that is greater than 50 meters is considered an error and is counted.

1.2.1.2 The answer to this data requirement is obtained by counting the number of times that the reported azimuth was more than __° or ___ mils. in error from the true azimuth.

1.2.1.3 This data requirement is determined by counting the number of range errors that were greater than 100 meters (answer to question 1.2.1.3.2) and adding this to the total number of azimuth errors that were larger than 11° to 200 mils. (answer to question 1.2.1.3.3).

1.2.1.4 This data requirement is determined by counting the number of times each detecting item of STANO equipment was not able to determine range and azimuth to the target. The number of "no" answers to question 1.2.1.4.1 is counted only for those items of STANO equipment that have the capability to determine range and azimuth.

EEA 1.2.2

1.2.2.1 The coordinates of each presented target (answer to 1.2.2.1.2.1) are compared with the site range limitations (answer to 1.2.2.1.2.2) for each of the items of STANO equipment. If the coordinates of the target fall within these site limitations, the target is considered to be available for detection by the particular item of equipment. If the target is available for detection, its true coordinates are then compared with the reported target coordinates derived from the equipment operator's detection (answer to 1.2.2.1.2.4). If a match occurs, then the operator's description of the target (answer to 1.2.2.1.6) is compared to the actual target description (answer to questions 1.2.2.1.1.1 through 1.2.2.1.1.10). If the direction of target movement could be correctly estimated, a "yes" is entered as the answer to question 1.2.2.1.13. If the rate of movement could be correctly estimated, a "yes" is entered as the answer to question 1.2.2.1.15. It should be assumed that stationary targets are correctly identified as to direction and rate of movement unless the equipment operator states otherwise. If the size of the target could be correctly identified, a "yes" is entered as the answer to

question 1.2.2.1.14. The total number of "yes" answers to questions 1.2.2.1.13 through 1.2.2.1.15 is obtained by addition, and this total is then divided by three (3). The result of this division is the number of targets correctly identified, and this result, in turn, is then divided by the total number of targets available for detection by that item of STANO equipment. This final figure, shown as a percentage, is the answer to data requirement 1.2.2.1.

1.2.2.2 The coordinates of each presented crew-served weapon target (answer to 1.2.2.2.2.1) are compared with the site range limitation (answer to 1.2.2.1.2.2) for each of the items of STANO equipment. If the coordinates of the target fall within these site limitations, the target is considered to be available for detection by the particular item. The coordinates of those targets available for detection, by item of equipment, are then compared to the reported target coordinates derived from the equipment operator's reports (answer to 1.2.2.2.2.5). If a match occurs, the operator's description of the target (answer to 1.2.2.2.2.6) is compared to the actual target description (answer to questions 1.2.2.2.1.1 through 1.2.2.2.1.4). If the size of the target is correctly identified, a "yes" is entered as the answer to question 1.2.2.2.3. The total number of "yes" answers to this question is then divided by the number of targets available for detection by the particular item of STANO equipment. This final figures, shown as a percentage, is the answer to data requirement 1.2.2.2.

1.2.2.3 The answers to this data requirement are obtained by analysis of the Commander's Debriefing Forms. On this form, the commander is expected to provide his judgement of the value of each item of STANO equipment with regard to each of these 13 questions. In the analysis, this judgement is interpreted as a simple "yes" or "no" answer. A tabulation is maintained during the conduct of the test. Upon completion of the test run, and again upon completion of the entire test, the "yes" answers are counted and compared to the total number of answers received. If the majority of answers to a particular question, for a certain item of equipment, are affirmative, that item can provide the desired information.

EEA 1.3.1

1.3.1.1 The answer to this data requirement is obtained by dividing the total number of "interference by degradation," by the total number of targets detected by the friendly forces (answer to 1.1.1.1.2).

1.3.1.2 Same as 1.3.1.1 above.

NOTE: Both interference by degrading or preventing the use of other STANO equipment may be combined into one data requirement.

EEA 1.3.2

1.3.2.1 The answer to this data requirement is obtained in the same manner as the answer to 1.3.1.1.

EEA 1.3.3

1.3.3.1 **Obtain** the answer by determining the order in which the same target was detected by different items of equipment. The number of devices that were never first to detect a particular target provides the answer.

EEA 1.3.4

1.3.4.1 The answer to this data requirement is obtained in the same manner as 1.3.1.1.

1.3.4.2 Same as 1.3.4.1 above.

NOTE: Same as note under 1.3.1.2.

EEA 1.3.5

1.3.5.1 The answer to this data requirement is obtained in the same manner as 1.3.1.1.

1.3.5.2 Same as 1.3.5.1 above.

NOTE: Same as note under 1.3.1.2.

DISTRIBUTION: Same as basic plan

DETAILED ANALYSIS - OBJECTIVE 2

The answers to the data requirement appearing in Objective 2 should be obtained in the following manner:

EEA 2.1.1 Obtain the absolute difference between 2.1.1.1.1 and 2.1.1.1.2 by subtracting the larger from the smaller. Sum these differences and divide this sum by the number of cases.

2.1.1.2 Same as 2.1.1.1 except substitute difference between 2.1.1.2.1 and 2.1.1.2.2.

2.1.1.3 Obtain total number of injuries from Human Factors Subobjective. Divide this into the number of cases i.e., the number of fire positions established, that is, the number of answers to 2.1.1.1.1.

2.1.1.4 Divide number of yeses obtained from 2.1.1.4.1 into total number of replies to 2.1.1.1.1.

2.1.1.5 Divide number of "no" responses to 2.1.1.5.1 into number of replies to 2.1.1.1.1.

2.1.1.6 Divide sum of "no" answers to 2.1.1.6.1 into sum of replies to 2.1.1.1.1.

2.1.1.7 Descriptive data, tabulate and record, but do not use for analysis. Only used in final report.

2.1.1.8 Same as 2.1.1.7.

EEA 2.1.2

2.1.2.1 Same as 2.1.1.1 except substitute difference between 2.1.2.1.1 and 2.1.2.1.2.

2.1.2.2 Same as 2.1.1.1 except difference of 2.1.2.2.1 and 2.1.2.2.2.

2.1.2.3 Same as 2.1.1.1 except difference of 2.1.2.3.1 and 2.1.2.3.2, or 2.1.2.2.2 with 2.1.2.4.1.

2.1.2.5 Same except use 2.1.2.5.1 and 2.1.2.5.2.

2.1.2.6 Same as 2.1.1.3 except count responses to 2.1.2.1.2 and 2.1.2.2.2.

2.1.2.7 Same as 2.1.1.5 except use no responses to 2.1.2.7.1.

2.1.2.8 Same as 2.1.1.1 except use times from 2.1.2.8.1 and 2.1.2.5.2.

2.1.2.9 Same except use 2.1.2.9.1 and 2.1.2.9.2.

2.1.2.10 Same except use 2.1.2.10.1 and 2.1.2.10.2.

2.1.2.11 Sum of responses to 2.1.2.1.1 plus 2.1.2.2.1 divided by sum of responses (any response except "none") to 2.1.2.11.1.

The examples given above provide every analysis procedure required for complete analysis of Objective 2 with the exception of different number for questions, details covered under Overall Analysis and those that follow:

2.3.2.1 Sum of combinations which resulted in improved performance, 2.3.3.1 through 2.3.3.5. Tabulate to determine the number that provide more information, reliability, etc.

2.4.2.1 Same as 2.3.2.1.

2.4.2.2 Same as 2.3.2.2.

2.4.2.4 Same as 2.3.2.1.

DISTRIBUTION: Same as basic plan

DETAILED ANALYSIS - OBJECTIVE 3

The answers to the data requirements appearing in Objective 3 should be obtained in the following manner:

EEA 3.1.1

3.1.1.1 Total the unit road marches by type for the 4 nights of runs per week.

3.1.1.2 Divide the distance of the premeasured course by the difference between 3.1.1.2.5 and 3.1.1.2.4.2.

3.1.1.3 Divide the number of yeses to 3.1.1.3.2 by 3.1.1.3.1.

3.1.1.4 Divide the sum of 3.1.1.4.1 by the sum of 3.1.1.1.

3.1.1.5 Divide the number on schedule by the total number of marches made.

3.1.1.6 Descriptive only.

3.1.1.7 Divide 3.1.1.7.2 by 3.1.1.7.1.

3.1.1.8 Descriptive only.

3.1.1.9 Compare the different runs 3.1.1.9.1, 3.1.1.9.2 and 3.1.1.9.3.

3.1.1.10 More dispersed formations should contribute to passing the EEA during the STANO runs.

3.1.1.11 Same as 3.1.1.10.

3.1.1.12 Same as 3.1.1.10.

3.1.1.13 Divide the sum of distances by the difference between start and end times.

3.1.1.14 Divide the number of marches made into the number detected.

3.1.1.15 Same as 3.1.1.5.

3.1.1.16 Same as 3.1.1.6.

3.1.1.17 Same as 3.1.1.7.

3.1.1.18 Same as 3.1.1.8.

3.1.1.19 Same as 3.1.1.10.

3.1.1.20 Same as 3.1.1.11.

3.1.1.21 If smaller partols could be safely used using STANO equipment the data requirement passes.

The examples given above provide every analysis procedure required for complete analysis of Objective 3.

DISTRIBUTION:
same as basic plan

DETAILED ANALYSIS - OBJECTIVE 4

The answers to the data requirements appearing in Objective 4 should be obtained in the following manner:

EEA 4.1.1

4.1.1.1 The sum of yeses to 4.1.1.1.1, 4.1.1.1.1.1, 4.1.1.1.2, and 4.1.1.1.5 subtracted from the no answers to these questions provides the answer.

4.1.1.2 The sum of yeses to 4.1.1.2.1 and 4.1.1.2.2 for the STANO runs subtracted from the sum of yeses for the zero runs.

4.1.1.3 If the integrity of the units and subelements was better maintained during the STANO runs the data requirement succeeds. Thus the sums for 4.1.1.3.2 and 4.1.1.3.3 compared for the two type runs provides the answer.

4.1.1.4 If the units were better able to maintain assigned time schedules during the STANO runs the data requirement passes.

4.1.1.5 The number of times sent out provides the answer.

4.1.1.6 Descriptive only.

EEA 4.1.2 Uses the same basic rationale as that for 4.1.1.

EEA 4.1.3

4.1.3.1 The answers to 4.1.3.1.1 and 4.1.3.1.2 summed for the zero runs and subtracted from the STANO runs fails or passes the data requirement.and the EEA.

EEA 4.1.4

4.1.4.1 If substantial changes and additions in personnel were required for the STANO runs, as opposed to the zero runs the EEA fails.

4.1.4.2 The same applies, with regard to equipment, as stated in 4.1.4.1.

EEA 4.2.1 This EEA and those which follow use the same rationale provided for 4.1.1. The examples given under 4.1.1 provide every analysis procedure required for completing the analysis of Objective 4.

DISTRIBUTION:
same as basic plan

DETAILED ANALYSIS - OBJECTIVE 5

The answers to the data requirements appearing in Objective 5 should be obtained in the following manner:

EEA 5.1.1

5.1.1.1 Should be used for descriptive information, providing a partial or primary reason for other things that happen in the test, and as a basis for calculation of the results for other data requirements.

5.1.1.2 The sum of the answers to the 26 questions under this data requirement subtracted from the sum of the answers, to 5.1.1.1 provides the answer.

5.1.1.3 The causes of failure must be tabulated i.e., frequency chart, and summed by device. The most frequent cause of failure should be provided by device and devices ranked by percent of total failures i.e., device which had the greatest percentage of failures last, least,first.

5.1.1.4 The sum of the answers to the 26 questions under this data requirement divided by the sum of the answers to 5.1.1.1 provides the answer.

5.1.1.5 Should be used primarily as descriptive data for the detailed final report and also as a basis for calculation of results for other data requirements.

5.1.1.6 Same as 5.1.1.5.

EEA 5.1.2

5.1.2.1 Same as 5.1.1.5.

5.1.2.2 Same as 5.1.1.5.

5.1.2.3 Same as 5.1.1.5.

5.1.2.4 Same as 5.1.1.5.

5.1.2.5 Same as 5.1.1.5.

5.1.2.6 This data requirement supports EEA 5.1.2 all by itself. The total time is obtained for all items by item, (for the detailed reporting in the final report of test) these are summed and divided by the number of items.

EEA 5.1.3

5.1.3.1 The periods of time should be compared with the down time indicated by 5.1.2.6 for descriptive data.

5.1.3.2 This data requirement supports the EEA all by itself. If the lack of 10% or more of items in for repair had a major adverse impact on the unit's performance, the level at which this occurred should be higher on the heavier BOI.

EEA 5.2.1

5.2.1.1 Same as 5.1.1.5.

5.2.1.2 Same as 5.1.1.5.

5.2.1.3 Same as 5.1.1.5.

5.2.1.4 Same as 5.1.1.5.

5.2.1.5 If the percentage of failures that were non-repairable is greater than 30% the EEA fails.

5.2.1.6 Same as 5.1.1.5.

5.2.1.7 Same as 5.1.1.5.

EEA 5.2.2

5.2.2.1 Same as 5.1.1.5.

5.2.2.2 Same as 5.1.1.5.

5.2.2.3 Same as 5.1.1.5.

5.2.2.4 Same as 5.1.1.5.

5.2.2.5 The sum of the products from this data requirement and 5.2.2.3 divide by the number of STANO equipment items provides the average for the EEA. If the average time is greater than in the control run, the EEA fails.

EEA 5.2.3

No analysis - zero weight.

EEA 5.2.4

No analysis - zero weight.

EEA 5.3.1

5.3.1.1 The number of cases from the 5.3.1 matrix divided by the number of items operating at the time provide the answer to the EEA.

5.3.1.2 Same as 5.1.1.5.

5.3.1.3 Same as 5.1.1.5.

EEA 5.3.2

5.3.2.1 Same as 5.3.1.1 with 5.3.2 matrix.

5.3.2.2 Same as 5.1.1.5.

5.3.2.3 Same as 5.1.1.5.

EEA 5.4.1

5.4.1.1 A simple count of the appropriate answers to 5.4.1.1.1 through 5.4.1.1.7 divided by the number of devices provides the answer.

5.4.1.2 Same as 5.4.1.1 using 5.4.1.2.1 through 5.4.1.3.4.

5.4.1.3 Sum of yes answers

EEA 5.4.2

5.4.2.1 Is answered by the product of the question 5.4.2.1.1.

5.4.2.2 Is answered by the product of 5.4.2.2.1 divided by the number issued.

5.4.2.3 Is answered by the product of 5.4.2.3.1 divided by the number issued.

DISTRIBUTION: Same as basic plan

DATA ANALYSIS FORMS

(OBJECTIVE AND SUBOBJECTIVE)

OBJECTIVE	CONTROL RESULT	WEIGHT	CONTROL X W	TEST RUN RESULT	TEST RUN RESULT X W	DIFFERENCE CONTROL X W MINUS TEST X W
1		25				
2		20				
3		25				
4		20				
5		10				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
SUBOBJECTIVE						
1.1		20				
1.2		40				
1.3		20				
1.4		20				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
2.1		30				
2.2		30				
2.3		20				
2.4		20				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
3.1		50				
3.2		10				
3.3		10				
3.4		10				
3.5		20				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
4.1		30				
4.2		20				
4.3		20				
4.4		15				
4.5		15				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
5.1		30				
5.2		30				
5.3		20				
5.4		20				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement

EEA DATA ANALYSIS FORMS

EEA	CONTROL RESULT	WEIGHT (W)	CONTROL X W	TEST* RUN RESULT	TEST RUN RESULT X W	DIFFERENCE CONTROL X W MINUS TEST X W
1.1.1		30				
1.1.2		30				
1.1.3		25				
1.1.4		15				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
1.2.1		60				
1.2.2		40				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
1.3.1		20				
1.3.2		20				
1.3.3		20				
1.3.4		20				
1.3.5		20				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
1.4.1		10				
1.4.2		10				
1.4.3		10				
1.4.4		15				
1.4.5		15				
1.4.6		10				
1.4.7		10				
1.4.8		10				
1.4.9		10				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement

*Obtain test run result from Data Requirements Analysis Form.

EEA DATA ANALYSIS FORMS

EEA	CONTROL RESULT	WEIGHT (W)	CONTROL X W	TEST* RUN RESULT	TEST RUN RESULT X W	DIFFERENCE CONTROL X W MINUS TEST X W
2.1.1		20				
2.1.2		25				
2.1.3		25				
2.1.4		20				
2.1.5		10				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
2.2.1		30				
2.2.2		20				
2.2.3		20				
2.2.4		20				
2.2.5		10				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
2.3.1		30				
2.3.2		50				
2.3.3		20				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
2.4.1		40				
2.4.2		60				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement

*Obtain test run result from Data Requirements Analysis Form.

EEA DATA ANALYSIS FORMS

EEA	CONTROL RESULT	WEIGHT (W)	CONTROL X W	TEST* RUN RESULT	TEST RUN RESULT X W	DIFFERENCE CONTROL X W MINUS TEST X W
3.1.1		30				
3.1.2		25				
3.1.3		25				
3.1.4		20				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
3.2.1		15				
3.2.2		15				
3.2.3		15				
3.2.4		20				
3.2.5		20				
3.2.6		15				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
3.3.1		35				
3.3.2		35				
3.3.3		30				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
3.4.1		50				
3.4.2		50				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
3.5.1		50				
3.5.2		50				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement

*Obtain test run result from Data Requirements Analysis Form.

EEA DATA ANALYSIS FORMS

EEA	CONTROL RESULT	WEIGHT (W)	CONTROL X W	TEST* RUN RESULT	TEST RUN RESULT X W	DIFFERENCE CONTROL X W MINUS TEST X W
4.1.1		30				
4.1.2		30				
4.1.3		20				
4.1.4		20				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
4.2.1		25				
4.2.2		25				
4.2.3		25				
4.2.4		25				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
4.3.1		40				
4.3.2		40				
4.3.3		20				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
4.4.1		40				
4.4.2		30				
4.4.3		30				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
4.5.1		50				
4.5.2		50				
	Σ	Σ = 100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement

*Obtain test run result from Data Requirements Analysis Form.

EEA DATA ANALYSIS FORMS

EEA	CONTROL RESULT	WEIGHT (W)	CONTROL X W	TEST* RUN RESULT	TEST RUN RESULT X W	DIFFERENCE CONTROL X W MINUS TEST X W
5.1.1		25				
5.1.2		25				
5.1.3		50				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
5.2.1		40				
5.2.2		40				
5.2.3		0				
5.2.4		20				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
5.3.1		50				
5.3.2		50				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement
5.4.1		50				
5.4.2		50				
	Σ	Σ =100	Σ	Σ	Σ	Σ > 100 = improvement Σ ≤ 100 = no improvement

*Obtain test run result from Data Requirements Analysis Form.

DATA REQUIREMENTS ANALYSIS FORM

(EXAMPLE)

DATA REQUIREMENTS	CONTROL RESULT	> < *	TEST RUN RESULT	IMPROVEMENT = 1* NO IMPROVEMENT = 0

$$2X \; \frac{\Sigma 1}{n} \; {}^{**}$$

*In some cases improvement will be a larger number in test run compared to control and in others a smaller number. This should be indicated in the >< column. No difference receives a zero.

**Carried over to EEA Analysis Form. Product of formula is test run result.

DISTRIBUTION: Same as basic plan

EXAMPLE SPREAD SHEET FOR EEA 1.1.1

Description of Activity (Aggressor's Description) (1.1.1.1.1)	Number of Activities	Activity detected (1.1.1.1.2.1) (Friendly Description)	Correct Detection (yes-no)	Percent Detected	Type Equipment det. Act. (1.1.1.4.2)	Number of Activities Detected	Act Det by CSNVTA Equip (1.1.1.5.2)	Act Det by mult CSNVTA Equip (1.1.1.5.3)	Percent Det by CSNVTA	Time Act Started (1.1.1.2.1)	Time Detected (1.1.1.2.5)	Time Delay	Average Time Delay	Time Act Ceased (1.1.1.2.4)	Elapsed Time (1.1.1.2.4-1.1.1.2.1)	Time Det Ceased (1.1.1.2.10)	Elapsed Time (1.1.1.2.10-1.1.1.2.5)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
				Data Requirement 1.1.1.1					Data Requirement 1.1.1.5				Data Requirement 1.1.1.3				

Target Under Cont Surv (Yes-No) (1.1.1.1.3)	Correct Time of Detection (Yes-No)	Actual Map Coordinates (1.1.1.2.2)	Reported Map Coordinates (1.1.1.2.7)	CSNVTA Coordinates (1.1.1.2.8)	Correct Coordinates (yes-no)	Correct Target Report (yes-no)	Percent Incorrect Rpt	Type Equipment det Act (1.1.1.4.2)	Actual Range	Average Range by Type Equipment	Reported Range 1.1.1.2.6	Error in Range 1.1.1.4.3	Range Error Larger than ___ meters	No of Pers in Act (1.1.1.1.3)	No of Pers Det (1.1.1.2.3)	No of Veh in Act (1.1.1.1.3)	No of Veh Det (1.1.1.2.4)
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
						4+20+24	Data Requirement 1.1.1.2			Data Requirement 1.1.1.4			Data Requirement 1.2.1.1				

NOTES:

(a) Column 5 equals the sum of "yeses" in column 4 divided by the sum of column 2.
(b) Column 6 should be summed by type of equipment.
(c) Column 10 equals the sum of column 8 divided by the sum of column 2.
(d) Column 13 equals column 12 minus column 11.
(e) Column 14 equals the sum of column 13 divided by the sum of "yeses" in column 4.
(f) Column 16 equals column 15 minus column 11.
(g) Column 18 equals column 17 minus column 12.
(h) Column 25 is yes if columns 4, 20 and 24 are all yes.
(i) Column 26 equals the sum of "no" in column 25 divided by the sum of "yes" in column 4.
(j) Sum column 28 by type of equipment .
(k) Column 29 equals the sum of column 28 divided by the sum of column 6.

ANNEX L TO PART I - STANO II TEST
BUDGET ESTIMATE

FY 70
27 August 1969

FIELD TEST BUDGET ESTIMATE

1. STANO II Preliminary Test.

2. USACDC Proponent Agency: USACDC Institute of Special Studies.

3. Command Conducting: USCONARC

4. Location and Date: Fort Bragg, North Carolina
15 September - 19 December 1969

5. Units Participating: See Troop List, Annex A.

a. 2d Brigade, 82d Airborne Division; Participating Personnel 764.

b. Support Elements; 82d Airborne Division and XVIII Airborne Corps; Participating Personnel 413.

6. Total Participation: 1246

a. Troops stationed at Fort Bragg 1177

b. Troops transported to Fort Bragg None

c. Other test personnel

(1) Advisors 15

(2) Other Third Army Test Directorate Personnel 54 — 69

7. Cost Detail:

Cost Element	Total Cost
a. Individual Travel and TDY (Appendix 1)	$ 86,748.12
b. Troop Movement	None
c. Transportation of Things (Appendix 2)	$ 25,480.00

Cost Element	Total Cost
d. POL (Appendix 3)	$ 22,667.00
e. Supplies (Appendix 4)	$ 24,210.00
f. Maintenance & Repair/Spare Parts (Appendix 5)	$186,400.00
g. Contractual Services (Appendix 6)	$ 24,000.00
h. Services (Printing, R&U, Communications included)(Appendix 7)	$ 17,847.00
i. Lease and Rental Charge	None
Part I - STANO II Field Test, Total Cost	$387,352.12

APPENDICES:
1 - Individual Travel and Cost
2 - Transportation of Things
3 - Cost of POL
4 - Cost of Supplies
5 - Cost of Maintenance and Repair/Spare Parts
6 - Cost of Contractual Services
7 - Cost of Services.

DISTRIBUTION:
same as basic plan

INDIVIDUAL TRAVEL AND TDY

1. Travel.

a. Test Directorate: 160 Total Personnel

(1) Personnel assigned to the Test Organization from Third Army locations other than Fort Bragg (54 officers).

FROM	NR	Round Trip Milage	RATE (POV)	
Fort Mcclellan	7	902	.07	$ 441.98
Fort Stewart	4	650	.07	$ 182.00
Fort Campbell	8	1144	.07	$ 640.64
Fort Jackson	10	328	.07	$ 299.60
Fort Gordon	10	500	.07	$ 350.00
Fort Benning	10	912	.07	$ 638.40
Fort Rucker	5	1112	.07	$ 389.20
Total	54			$2,941.82

It is assumed that remaining Test Directorate personnel, both officers and EM, will come from Fort Bragg sources.

(2) Other travel: 10 personnel (Test Director, Deputy Director and 8 principal staff members).

10 personnel x 3 round trip x $62.00 = $1,860.00

It is estimated that key directorate personnel require three working visits (by commercial air) to Fort Belvoir to coordinate initial planning, detailed planning, report preparation, etc.

b. Specialized Training: 34 Total Personnel.
(Fort Bragg to Fort Huachuca for sensor and radar training)

34 x $256.00 (Comm/air round trip) $8,704.00

c. Advisory and Liaison: 15 Total Personnel

(1) USACDC Agencies: 5 Total Personnel

Number	From	Trips	Round Trip Comm/Air
1 Off	Fort Benning	3	$ 294.00
1 Off	Fort Knox	3	$ 270.00
1 Off	Fort Sill	3	$ 636.00
1 Off	Fort Rucker	3	$ 456.00
1 Off	Fort Holabird	3	$ 276.00
			$1,932.00

NOTE: It is anticipated that the above personnel will visit Fort Bragg three times during conduct of the test: 1) One visit of approximate two weeks duration during pre-test preparation, 2) one visit during Pilot Test and, 3) once during actual test run.

(2) One Civilian Operations Research Advisor (CORG)

1 x 4 trips (Comm/Air) = $248.00

(3) USAMC Advisors: 7 personnel. (only four are programmed for travel; two are on permanent assignment to Fort Bragg and one, the NOTTS Team Chief, is funded separately.)

Number	From	Trips	Round Trip Comm/Air
1 Off	Fort Monmouth	4	$ 472.00
1 Off	Washington, D.C.	4	$ 248.00
1 Civ	Philadelphia	4	$ 384.00
1 Civ	Fort Belvoir	4	$ 248.00
			$1,352.00

(4) USACDC-ISS, STANO Study Directorate:
Two (2) project officers alternating full time, plus coordination visits by Division Chief (20 trips total).

2 x 20 x $62.00 (Comm/Air round trip) = $2,480.00

d. Transportation cost of TDY personnel while at Fort Bragg. (Computed on estimated 25 miles per day for duration of TDY; 07¢ per mile, Military; 10¢ per mile, Civilian).

(1) Test Directorate:

12 x 184 days x 25 miles x .07	$ 3,864.00
12 x 168 days x 25 miles x .07	$ 3,528.00
30 x 96 days x 25 miles x .07	$ 5,040.00
	$12,432.00

(2) Advisors and Liaison

5 mil x 27 days x 25 miles x .07	$ 236.25
3 mil x 112 days x 25 miles x .07	$ 588.00
3 civ x 112 days x 25 miles x .10	$ 840.00
2 mil x 80 days x 25 miles x .07	$ 280.00
1 civ (CORG) x 184 days x 25 miles x.10	$ 460.00
	$2,404.25

Estimated total travel cost $34,354.07

2. TDY

a. Test Directorate

(1) It is estimated that 54 officers will be TDY to Fort Bragg from throughout Third Army. Due to planning and pre-test activities, various numbers of these individuals are required on site at different dates. Per diem rate are computed at $5.15 per day (quarters and meals available).

Twelve (12) officers	15 Aug 69 - 15 Feb 70 (184 days)
Twelve (12) officers	1 Sep 69 - 15 Feb 70 (168 days)
Thirty (30) officers	15 Sep 69 - 19 Dec 69 (96 days)

12 x $5.15 x 184	$11,371.20
12 x $5.15 x 168	$10,382.40
30 X $5.15 x 96	$14,832.00
54 (total per) x $8.00 (rate for 1st day of travel)	$ 482.00
	$37,067.60

(2) Other Travel: 10 people, 3 trips of 4 day duration each to Washington, D. C. from Fort Bragg.

10 x 3 x 4 x $16.00 (full rate) $ 1,920.00

b. Special Training: 34 Enlisted Personnel to Fort Huachuca; 10 for 28 days, 24 for 14 days. ($5.15 per diem used based on assumption that all personnel are married)

10 x 28 x $5.15	$1,442.00
24 x 14 x $5.15	$1,730.00
	$3,172.00

c. Advisory and Liaison

(1) Five (5) USACDC Agency adivsors, each making 3 visits of 28 days total duration.

5 x 27 x %5.15	$695.25
15 x $8.00 (rate for 1st travel day)	$120.00
	$815.25

(2) One (1) Civilian Operation Research Advisor:

1 Sep 69 - 15 Feb 70 (184 days)
Computation based on estimated $20.00 a day living expense.

184 x $20.00	$3,680.00

(3) USAMC Advisors: Seven (7) personnel. Only 6 are included in this computation. (NOTTS team chief funded from separate source). Duration each individual; 1 Sep 69 - 19 Dec 69 (112 days).

6 x 112 x $5.15	$3,460.00
4 (per. funded for travel) x 4 (Nr. of Visits) x $8.00 (per diem rate for 1st travel day)	$ 128.00
	$3,588.00

(4) USACDC-ISS, STANO Study Directorate
Two (2) officers from 1 Sep 69 - 15 Feb 70, (184 days)

2 x 184 x $5.15	$ 1,895.20
2 x 16 (Nr. of visits) x $8.00 (rate for 1st travel day)	$ 256.00
	$ 2,151.20
Estimated total TDY cost	$52,394.05
Estimated total travel cost	$34,354.07
Total Travel and TDY	$84,748.12

DISTRIBUTION:
same as basic plan

TRANSPORTATION OF THINGS

1. General. The cost under this category is based on the transportation of TOE equipment necessary for the test but not available at Fort Bragg. This equipment consists of TOE STANO equipment listed in Annex E Test Equipment and the five (5) M48A3 tanks required for the tank platoon.

2. Cost. Shipping cost is based on $20.00 per 100 weight by air and $6.00 per 100 weight by truck/rail.

3. TOE STANO Equipment. The total weight of the TOE STANO equipment shipped to Fort Bragg is 36,000 lbs. Approximately 50% of this equipment was shipped by air and the other 50% shipped by truck/rail.

a. 18,000 lbs x $20.00/100wt x 2	$ 7,200.00
b. 18,000 lbs x $ 6.00/100wt x 2	$ 2,160.00
	$ 9,360.00

4. M48A3 Tanks. Five (5) M48A3 tanks were shipped by rail to Fort Bragg from Anniston Army Depot, Alabama. An M48A3 tank weighs 104,000 lbs. For the distance of 504 miles between Fort Bragg and Anniston Army Depot and return the shipment rate is $1.55 per 100 weight.

104,000 lbs x 5 x $1.55/100wt x 2 = $16,120.00

5. Total Cost $25,480.00

DISTRIBUTION:
Same as basic plan

POL

1. General. The cost of POL is based on the estimate that the vehicles listed below will travel and average of 50 miles a day for 70 days. The vehicles to participate in the test are listed below:

	TYPE OF VEHICLE	QUANTITY
a.	Truck, utility, ¼ ton	99
b.	Truck, cargo, 3/4 ton	48
c.	Truck, cargo, 2½ ton	41
d.	Truck, van and shop, 2½ ton	10
e.	Truck, cargo, 5 ton	6
f.	Truck, wrecker, 5 ton	4
g.	Tank, combat full tracked: Armored M48A3	5
h.	Vehicle, armored, M551	3
i.	Carrier, personnel full tracked; armored M113	4

2. POL Cost

a. Fuel Cost (MOGAS/Deisel). The total tank capacity for the vehicles listed above is 8,690 gallons. To operate these vehicles over a period of 70 days at 50 miles per day an additional 149,117 gallons will be required. Total fuel cost is based on the cost of the fuel required for the original top off plus the cost of the additional fuel to be consumed during the 70 days testing.

(1)	Cost of original top off fuel	$ 1,031.00
(2)	Cost of additional fuel required	$17,657.42
(3)	Total fuel cost	$18,688.42
b.	Oil	$ 2,882.67

c. Gear lubricants	$ 658.35
d. Grease	$ 438.01
3. Total POL Cost	$22,667.00

DISTRIBUTION:
same as basic plan

APPENDIX 4 TO ANNEX L TO PART I - STANO II TEST
COST OF SUPPLIES

COST OF SUPPLIES
(EXPENDABLE AND NONEXPENDABLE)

1. General. Cost experience factors on what supplies would be expended by a battalion size test force over a 90 day period were not available from the 82d Airborne Division, XVIII Airborne Corps, or Headquarters USCONARC. Therefore the cost considerations upon which this estimate is based were extracted from a previously prepared budget estimate for Troop Test TARS-75, which was based on a Brigade size test unit.

2. Basis for Cost Estimate. The estimated cost of supplies is based on the average monthly operating expense of 20% of a Separate Infantry Brigade for three months.

3. Expendable Supplies.

a. Clothing & Textiles

310.00 x .2 x .6 x 3 months	$ 112.00

b. General Supplies

3,100.00 x .2 x .6 x 3 months	$ 1,116.00

c. Industrial Supplies

407.00 x .2 x .6 x 3 months	$ 147.00

d. Electronics

16.00 x .2 x .6 x 3 months	$ 6.00

e. Ground Forces Support

1,500.00 x .2 x .6 x 3 months	$ 540.00

f. Weapons & Fire Control

570.00 x .2 x .6 x 3 months	$ 205.00
Total Expendable	$ 2,126.00

4. <u>Nonexpendable Supplies</u>.

a. Clothing & Textiles

21,665.00 x .2 x .6 x 3 months	$ 7,799.00

b. Medical Supplies

2,000.00 x .2 x .6 x 3 months	$ 720.00

c. General Supplies

9,600.00 x .2 x .6 x 3 months	$ 3,456.00

d. Industrial Supplies

530.00 x .2 x .6 x 3 months	$ 191.00

e. Electronics

5,800.00 x .2 x .6 x 3 months	$ 2,088.00

f. Ground Forces Support

3,370.00 x .2 x .6 x 3 months	$ 1,213.00

g. ATAC

10,830.00 x .2 x .6 x 3 months	$ 5,699.00

h. Aircraft Supplies

400.00 x .2 x .6 x 3 months	$ 144.00

i. Weapons & Fire Control

2,150.00 x .2 x .6 x 3 months	$ 774.00
Total Nonexpendable	$22,084.00

5. Total Expendable and Nonexpendable $24,210.00

DISTRIBUTION:
same as basic plan

APPENDIX 5 TO ANNEX L TO PART I - STANO II TEST
MAINTENANCE AND REPAIR/SPARE PARTS

MAINTENANCE AND REPAIR/SPARE PARTS

1. General. It is anticipated that maintenance support and repair/spare parts requirements for an equivalent Infantry Battalion will be needed for approximately seventy (70) days (5 days per week for 14 weeks).

2. Basis of Cost Estimate. Experience factors compiled by USCONARC based on field training exercises, reflects an expenditure of approximately $40,000.00 in maintenance and repair/spare parts support for an Infantry Battalion undergoing field training for a 15 day period. The STANO II test units will equate to an Infantry Battalion and will spend an estimated seventy (70) days in field type training. Using a conversion factor of 4.66 (70 ÷ 15), it is projected that $186,000.00 will be needed for maintenance and repair/spare parts support.

Estimated total cost for Maintenance and Repair/Spare Parts:

$186,400.00.

DISTRIBUTION:
same as basic plan

CONTRACTUAL SERVICES

1. Proposed supplement for $24,000.00 previously submitted for approval, represents the estimated contractual cost for the conduct of the STANO II Preliminary Test. This supplement was projected to cover contractual scientific support (CORG) for the original STANO II Field Test; and, in that required services and the period covered are unchanged, is still valid for support of this Preliminary Test.

Proposed Contract Estimate, FY 70 @8 man month $24,000.00.

DISTRIBUTION:
same as basic plan

APPENDIX 7 TO ANNEX L TO PART I - STANO II TEST SERVICES

SERVICES

1. Requirements for Secretarial and Clerk-Typist Support.

a. One (1) Secretary (Stenographer)(GS-5). Secretary for Test Director for a period of 120 days @$400.00 per 30 day period.

$400.00 x 4	$1,600.00

b. Five (5) Clerk-Typist (GS-3). Clerk-typist required to support Test Directorate Staff for a period of 120 days @$360.00 per 30 day period.

$360.00 x 4 x 5	$7,200.00
c. Total Secretarial/Clerk-Typist Cost	$8,800.00

2. Repair and Utilities (Estimated @$300.00/mo. x 4 mo.)

$1,200.00

3. Telephone.

a. 2 man hours per installation

b. $4.00 per hour wage scale

c. 10 Class A and 15 Class B telephone required

25 x 2 x $4.00	$ 200.00

4. Printing and Reproduction.

a. Xerox

(1) Draft Plan of Test

600 pages x 25 copies	15,000 pages

(2) Data Collection Forms

36 forms x 10 pages each x 50 copies	18,000 pages

(3) Scenarios

2 scenarios x 50 pages x 50 copies	5,000 pages

(4) Control Plans

2 plans x 20 pages x 75 copies	3,000 pages

(5) Analysis Plan

1 plan x 25 pages x 25 copies	625 pages

(6) Interim Report of Test

1 report x 200 pages x 185 copies	37,000 pages
Total Pages	78,625 pages
78,625 pages x 6¢/page	$ 4,728.00

b. Printing

(1) Plan of Test

600 pages x 150 copies	90,000 pages

(2) Report of Test

250 pages x 185 copies	46,250 pages
	136,250 pages

(3) Printing Cost

850 pages required 55 plates @$50.00/plate= $2,750.00

(4) Cost of Paper

136,250 pages = 272.5 reams @$.62/ream = $169.00

c. Total Printing and Reproduction Cost	$ 7,647.00
5. Total Cost of Service	$17,847.00

DISTRIBUTION:
same as basic plan

ANNEX M TO PART I - STANO II TEST
MILESTONES SCHEDULE

MILESTONES SCHEDULE

1. PURPOSE: This annex outlines the milestones schedule pertaining to STANO II Preliminary Test.

2. MAJOR MILESTONES:

a.	August 1969	USACDC Recommendation to DA for scope of test.
b.	August 1969	USACDC identified troop list and budget.
c.	August 1969	DA approval of USACDC scope of test (reference a).
d.	September 1969	USACDC publish STANO II - Part I plan of test.
e.	September 1969	USAMC delivers SEA NITEOPS materiel to test site.
		USAMC provides NOTTS Teams to Test Director.
f.	15 Sep-24 Oct 1969	USCONARC publishes final detailed plan of test.
g.	27 Oct 1969	USCONARC initiate the conduct of the pilot test.
h.	10 Nov-12 Dec 1969	USCONARC conduct field test with AMC assistance in training and maintenance, and USACDC assistance in evaluation.
i.	19 Dec 1969	USCONARC releases test force, collectors and controllers. Release of SEA NITEOPS materiel to be announced.
j.	15 Jan 1970	USCONARC provides informal interim results of test to be used as input for STANO III.
h.	15 Feb 1970	USCONARC publish report of test.

Distribution: Same as basic plan

GLOSSARY

1. PURPOSE: This annex contains some of the terms related to combat surveillance, night vision and target acquisition.

2. GLOSSARY:

Active vision devices - An item of optical equipment which requires energy projected from a man-made source to provide an image to the user.

ACOUSID - Acoustic and seismic intrusion detector.

ADSID - Air delivered seismic intrusion detector.

ALERTS - Airborne laser equipment real-time surveillance.

Ambient light - All light available from natural sources.

Artificial illumination - Any man-made or man-generated illumination.

ARFBUOY/NBB - Automatic radio frequency buoy/noiseless button bomblet.

Battlefield illumination - The lighting of the zone of action of ground combat and combat support troops by artificial means other than invisible rays.

BOI - Basis of Issue.

CSNVTA - Combat Surveillance, Night Vision and TArget Acquisition. Term recently replaced by STANO.

Diffusion - Illumination of the area beneath and to the flanks of a slightly elevated searchlight beam by the light scattered from atmospheric particles.

Direct illumination - A type of battlefield illumination provided by direct light from pyrotechnics or searchlights.

Far Infrared - That portion of the electromagnetic spectrum of longer wavelength than the near infrated portion. This radiation is characteristic of that emitted by objects warmer than their surrondings.

FIRTI - **Surveillance Set, Infrared**

FLIR - Forward looking infrared target acquisition and fire control system.

GSID - Ground emplaced seismic intrusion detector.

Heavy overcast conditions - Illumination on the order of 10^{-5} foot-candles.

HELOSID - Helicopter/air delivered seismic intrusion detector.

HHV - Hand held viewer.

Indirect illumination - A type of battlefield illumination obtained by employing searchlights using diffusion or reflection techniques.

INFANT - Iroquois night fighter and night tracker.

Infrared light source - Light from which the visible portion of the spectrum has been removed by the use of special filters.

Invisible illumination - Any illumination not visible to the unaided eye.

MAGID - Magnetic intrusion detector.

MINI-HANSID - Miniaturized hand emplaced seismic intrusion detector.

Moonlight conditions - Illumination on the order of 10^{-2} foot-candles.

MODS - Mortar delivered sensor

Near infrared - That portion of the electromagnetic spectrum which is adjacent to, or "near" the visible light portion. It includes that portion of the infrared spectrum from about 0.85 micron of 1.2 microns in wavelength; the lower limit being approximately that of visible light, the upper limit being that of the cutoff point for the near infrared photoemissive surface presently available.

Organization - Unit structures with organic personnel (to include qualtative personnel) and equipment.

Passive vision device - An item of optical equipment which requires only available ambient energy to provide an image to the user.

PIRID - Passive infrared intrusion detector

Reflection - Illumination of an area by reflection of a searchlight beam from low-lying clouds.

SARS - Sensor Analog Relay System

SNS - Stabilized night sight.

SPIKESID - Acoustic and seismic spike implanted intrusion detector.

STANO - Surveillance, Target Acquisition Night Observation.

Starlight conditions - Illumination of the order of 10^{-4} foot-candles.

Surveillance - The systematic observation of air, surface, or subsurface areas by visual, electronic, photographic, or other means for intelligence purposes.

SVS - Supplementary visible/infrared vehicular searchlight.

Visible illumination - Any illumination visible to the unaided eye.

DISTRIBUTION: Same as basic plan.

REFERENCES

1. PURPOSE: This annex outlines the references used in the preparation of this plan.

2. REFERENCES:

a. Letter, FOR DS DC, Hq, DA, ACSFOR, 3 June 1967, subject: Operational Evaluation of SEA NITEOPS Equipment (U).

b. Letter, CDCRE-T, Hq, USACDC, 16 August 1967, subject: Concept for Operational Evaluation SEA NITEOPS, w/1st Ind FOR DS DC, Hq,DA, OACSFOR, 17 November 1967.

c. Letter, CDCCS-NV,Hq, USACDC, 22 March 1968, subject: Letter of Instruction - Special Assistant to Chief of Staff, U.S. Army Combat Developments Command for Night Operations.

d. Outline Plan for Operational Evaluation of Southeast Asia, Hq, USACDC, March 1968.

e. Letter, CDCRE-T, Hq, USACDC, 1 April 1968, subject: Outline Plan for Operational Evaluation of SEA NITEOPS (U).

f. Project Master Plan (PMP), SEA NITEOPS, July 1968.

g. Coordinated Test Plan, Southeast Asia Night Operations (CTPSN), 17 September 1968.

h. Letter, ACSFOR, Hq, DA, OACSFOR, 24 September 1968, subject: Combat Developments for Southeast Asia Night Operations (SEA NITEOPS).

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j. Letter, AMC PM-SN, Project Manager SEA NITEOPS, U.S. Army Materiel Command, 7 January 1969, subject: SEA NITEOPS Schedule.

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y. FM 6-121, Field Artillery Target Acquisition.

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aa. FM 7-11, Rifle Company, Infantry, Airborne, and Mechanized.

bb. FM 7-15, Rifle Platoon and Squads, Infantry, Airborne, and Mechanized.

cc. FM 7-20, Infantry, Airborne Infantry, and Mechanized Infantry Battalions.

dd. FM 17-1, Armor Operations.

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ff. FM 17-36, Divisional Armored and Air Cavalry Units.

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